CITY OF PORTLAND, MAINE
PLANNING BOARD



Sean Dundon, Chair
Brandon Mazer, Vice Chair
David Eaton
David Silk
Austin Smith
Maggie Stanley
Lisa Whited

AGENDA
PORTLAND PLANNING BOARD MEETING

The Portland Planning Board will hold a meeting on January 8, 2019, Room 24, Basement Level of City Hall, 389 Congress Street. **Public comments will be taken for each item on the agenda during the estimated allotted time and written comments should be submitted to planningboard@portlandmaine.gov**.

WORKSHOP - 4:30 PM

i. Sign Ordinance Rewrite, City of Portland, Applicant. (4:30 - 5:30 p.m. estimated time) The Planning Board will hold a workshop on the rewriting of the Sign Regulations portions of the City's Land Use Code, including discussion of work completed to date, goals, priorities for new sign regulations and next steps.

PUBLIC HEARING - 6:30 PM

1. COMMUNICATION AND REPORTS

2. REPORT OF ATTENDANCE AT THE MEETING HELD ON DECEMBER 17, 2018

Public Hearing: Dundon, Mazer, Eaton, Smith, Stanley and Whited present; Silk absent. Mazer recused from Hotel Inclusionary Zoning.

3. REPORTS OF DECISIONS AT THE MEETING HELD ON DECEMBER 17, 2018

i. Level III Site Plan; 22 Bramhall Street; Maine Medical Center, Applicant. Mazer moved and Stanley seconded a motion to waive the maximum driveway width of 24 feet to allow 34 feet. Vote: 6-0, Silk absent. Mazer moved and Stanley seconded a motion to waive brick sidewalks to allow concrete on Congress and Gilman. Vote: 6-0, Silk absent. Mazer moved and Stanley seconded a motion to waive the Chapter 500 stormwater regulations to allow a subsurface unit with less surface area. Vote: 6-0, Silk absent. Mazer moved and Stanley seconded a motion to waive the lighting standards to allow 1.84 foot candles within the green roof and average and maximum levels 1.34 and 5.4 foot candles, respectively. Vote: 6-0, Silk absent. Mazer moved and Stanley seconded a motion to approve the Traffic Movement Permit with six (6) conditions of approval. Vote 6-0, Silk absent. Mazer moved and Stanley seconded a motion to approve the Site Plan and Amended Site Location of Development Applications with fourteen (14) conditions of approval. Vote: 6-0, Silk absent.

ii. Level III Site Plan; 100 Fore Street; 100 Fore Street, LLC., Applicant. This item was postponed to January 8, 2019. No tabling motion.

iii. Hotel Inclusionary Zoning; Ordinance Amendments, City of Portland, Applicant. Stanley moved and Eaton seconded a motion to find the proposed text amendments consistent with the Comprehensive Plan and recommends adoption of the amendments to the City Council. Vote: 5-0. Mazer recused and Silk absent.

4. ROLL CALL AND DECLARATION OF QUORUM

5. NEW BUSINESS

i. Election of Officers (6:30 - 6:40 p.m. estimated time)

ii. Level III Site Plan; 100 Fore Street; 100 Fore Street, LLC., Applicant. (6:40 - 7:45 p.m. estimated time) The Planning Board will hold a public hearing to consider the redevelopment of 100 Fore Street. A portion of the existing building will be demolished and the remaining 9,100 sf will be renovated for a fitness center. A three-level parking garage (total of 539 parking spaces) and office space above the parking, as well as retail space on Fore Street, are proposed. The building footprint is approximately 65,046 sf and the total building square footage is 277,562 sf. Access to the parking levels is proposed from Fore Street (across from Mountfort) and from a proposed easterly driveway off Fore Street that is proposed to meet city street standards. The 2.97 acre lot is located within the B-6 Eastern Waterfront zone and subject to review under Portland's site plan standards.

iii. Level III Site Plan; 250 Riverside Industrial Parkway; Two Eisenhower Drive, LLC., Applicant. (7:45 p.m. estimated time) The Planning Board will hold a public hearing to consider a proposed two-story, 14,720 sf property services building. A total of 3.36 acres of the 12.4 acre site will be paved or gravel for parking, circulation, and outdoor material storage. The proposal is subject to Portland site plan standards and delegated review of Maine's Site Location of Development Act standards.

MEMORANDUM
PLANNING AND URBAN DEVELOPMENT DEPARTMENT
PLANNING DIVISION

To:	Sean Dundon, Chair, and Members of the Portland Planning Board
From:	Christine Grimando, Senior Planner
Date:	January 4, 2019
Re:	Sign Ordinance Update
Meeting Date:	January 8, 2019

As part of the ReCode effort, the Department of Planning and Urban Development has undertaken the rewriting of the City's sign regulations, currently Division 22 of the City's Land Use Code. The January 8th workshop is a chance to provide an update to the Planning Board and the public on the goals of the rewrite, the status of the rewrite, and next steps in the project.

The project has several goals, consistent with the larger goals of the ReCode. Organizationally, the regulations could be clearer, easier to administer, and more concise. They will be reorganized for improved clarity. They're also a section of the Land Use Code that lend themselves particularly well to the addition of illustrations and graphics, and so the new iteration will be substantially more visual. The rewrite presents a chance to address new technologies and new sign types, such as electronic messaging centers. It's also an opportunity to evaluate the different aesthetic and dimensional needs for signs throughout the diverse areas of the city. Lastly, there is a need to evaluate the sign standards for current state and federal case law.

The City has contracted with a consulting firm, Lisa Wise Consulting, Inc. to assist with the project. They've completed an audit of the current sign regulations, held meetings with stakeholders this past summer, and are currently preparing a new draft code that will be brought to the Planning Board to review in the coming months.

At the January 8th workshop, staff will give a more detailed overview of the project for the Board's comments and suggestions.

Attachments

1. Sign Code Audit
2. Community Workshop Presentation

SIGN CODE AUDIT & RECOMMENDATIONS REPORT

DIVISION 22, SIGNS

City of Portland, ME



September 6, 2018 | Final

LISA WISE CONSULTING, INC.

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A. Introduction

1. Purpose and Intent of Report

The City of Portland has a long history of comprehensive and long-range planning. This is reflected in the recently adopted *Portland's Plan 2030* (Comprehensive Plan). The Comprehensive Plan's vision is comprised of six interconnected themes which provide the foundation for the City's policies and priorities (See Figure A.1).



Figure A.1: Portland's Plan 2030 vision statement

The placement, quality, size, and design of signs on private property compliments and contributes to the envisioned character and aesthetic appeal of a community. Well-designed signs can promote and accomplish the policies of the Comprehensive Plan, support the local economy by helping to ensure local businesses are successful, provide safe and attractive signage for all uses, and promote the free flow of pedestrian and vehicular traffic.



Figure A.2: Example of painted wall signs in Downtown Portland



Figure A.3: Example of a well-designed projecting sign

The City of Portland hired Lisa Wise Consulting, Inc, (LWC) to revise its Sign Code to ensure that a clear, concise, user-friendly, well-illustrated, and legally-defensible code may be adopted. As part of this work, LWC will also ensure that the sign regulations are consistent with the City's goals, objectives and policies as reflected in the Comprehensive Plan.

2. Overview of Report

This Sign Code Audit and Recommendations Report is included in Task 1.4 (Sign Code Diagnosis and Recommendations Report) of the project to update the City of Portland's existing sign regulations.

The Code Audit includes a summary of general recommendations and an overview of the legal principles that municipalities must follow to adopt a legally-defensible and constitutionally sound sign code. Thereafter, a comprehensive audit of the City's current Sign Code, including regulations related to signs located outside Division 22 (Signs), will identify where amendments are required, where new regulations are recommended, and what current regulations may be carried forward, updated and expanded as needed. The Code Audit does not include specific text amendments as these will be provided in Task 2 (Preparation of Sign Code Standards). A summary of comments provided in the July 9, 2018 stakeholder interviews and community workshop are included, as well as a draft annotated outline of a recommended Table of Contents for the updated Sign Code. This has been formatted to fit within the draft Table of Contents for the *ReCode* Land Use Code update project. The report concludes by describing next steps for the eventual successful adoption of an updated Sign Code for the City.

3. Summary of Recommendations

The technical review of the City of Portland's Sign Code includes numerous recommendations for stylistic and content revisions to the Code to ensure it meets the City's goals. The key recommendations of this technical review are outlined below in no particular order of importance.

- The primary goal of the updated Sign Code is to ensure that all sign regulations are legally-defensible and consistent with applicable federal and State requirements including the U.S. Supreme Court's decision in the *Reed v. Town of Gilbert* sign code case. The updated Sign Code will rely on existing administrative procedures and standards as much as possible, while ensuring that a clear, concise, user-friendly, and well-illustrated Sign Code is produced.
- Develop a new simplified and reorganized Table of Contents for the Sign Code to make it easier for City staff, sign industry professionals, and Portland residents to read, use, and apply (See Section G. (Proposed New Table of Contents)).
- Consolidate as much as possible all sign regulations located outside of Division 22 (Signs), including regulations in Article IX (Historic Preservation), Article V (Site Plan), the City of Portland Design Manual, Article III (Zoning), and Article X (Alternative Energy) into a unified Sign Code so that all sign rules are accessible in one place. Cross-references will be updated as necessary.
- The administrative and permitting provisions will be updated and modernized as needed, redundancies and duplication of procedures will be removed, and cross-references to the City's existing administration and procedures sections will be included.
- Revise and update the definitions to ensure all new terms are defined, existing content-based terms are updated or removed, and redundant terms are excluded. For now, all sign-related definitions will be included at the end of the draft Sign Code so that they can be moved into the new Definitions Chapter of the updated Land Use Code at the appropriate time.
- Develop easily understandable regulations supported by simple illustrations to explain the general requirements for all signs, including for example, sign area and height measurement for building mounted and freestanding signs and sign illumination.
- A new approach for presenting the standards for signs is recommended, based on a clear distinction between permanent and temporary signs. Updated standards for permanent signs using the City's existing standards for calculating the quantity and area of signs organized by zoning district are recommended as these base standards generally appear to meet the City's signage needs.
- The City's existing sign design guidelines will be updated and expanded to ensure that all signage is consistent with the City's aesthetic values.

- Allow for increased flexibility in the sign standards to allow for variations in site layout and building design.
- Ensure that Portland's signs contribute to and reinforce the City's historic character and architecture, particularly within historic districts.
- Sidewalk signs appear to be important to promote a vibrant and active streetscape in certain areas of the City, such as within the downtown, within historic districts, and along the wharves.
- Include updated standards reflecting the City's desire to protect the night sky and minimize glare and light pollution.
- Include standards that reflect the utilization of current sign technologies (e.g. standards for electronic message centers (EMCs) and LED lighting) and to promote energy conservation.

B. Principles of Sign Regulation

1. Content-Neutral Time, Place, and Manner Regulations

For many years, U.S. courts have affirmed that sign regulations must be "content-neutral" to survive a legal challenge. For a sign regulation to be content-neutral, the sign code must be based on "time, place, and manner" restrictions, rather than by making distinctions based on the message the sign conveys. Time, place and manner restrictions, as the name suggests, limit the length of time, the manner, and place or location of the sign. As an example, well-written sign regulations may include a limitation on the length of time they may be displayed, especially for portable or temporary signs, such as A-frames or banner signs; restrictions on the total area of a sign, its height, and how the sign may be illuminated or designed; and where the sign may be placed (i.e. not to encroach within public a right-of-way).

The challenge for the City of Portland is how to update the Sign Code and related regulations in such a way that it reflects a careful balance of community tolerance for risk and the community's desire for aesthetic considerations.

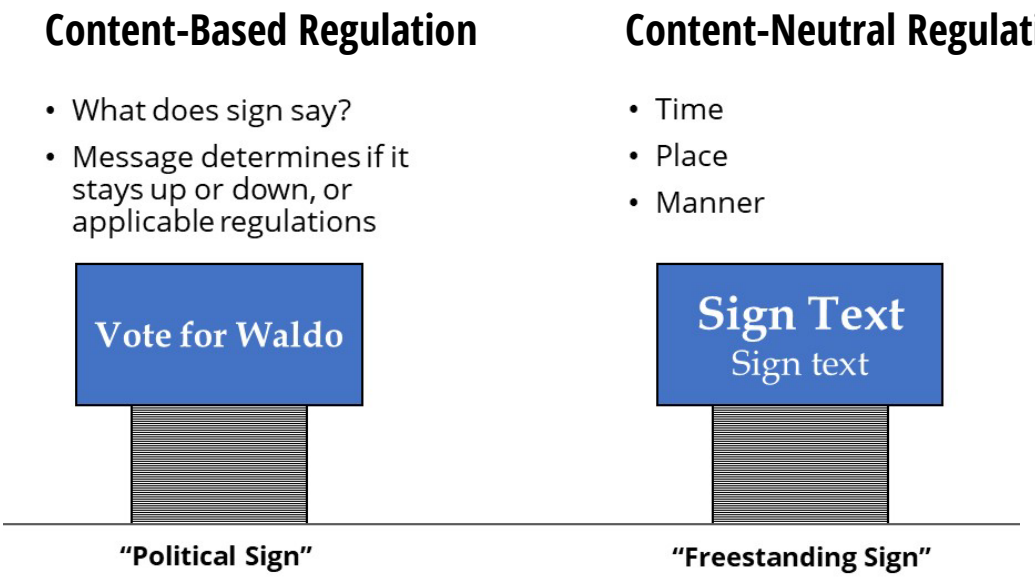


Figure B.1: The distinction between a content-based and a content-neutral sign

2. Overview of *Reed v. Town of Gilbert* sign case

Following the U.S. Supreme Court's decision in *Reed v. Town of Gilbert* in June 2015, regulating signs in a content-neutral manner to satisfy First Amendment limitations became more difficult for local governments. In this landmark First Amendment case available here - www.supremecourt.gov/opinions/14pdf/13-502_9olb.pdf - all nine Supreme Court justices agreed that the Town of Gilbert, Arizona's, Sign Code failed the First Amendment's content neutrality requirement.

The Town of Gilbert's Sign Code distinguished among a variety of categories of signs, and it provided different regulations for "political signs," "ideological signs," "directional signs for qualifying events," "real estate signs," and others. The pastor for a local church placed temporary signs in street rights-of-way to advertise religious services, but the Town's enforcement staff enforced its Sign Code against the church's temporary signs. Consequently, the church filed a challenge to the Town's Sign Code. The federal district court upheld Gilbert's Sign Code on summary judgment, a decision that was affirmed by the Ninth Circuit Court of Appeals. The Town then appealed to the U.S. Supreme Court.



Figure B.2: One of the signs at issue in the Reed *case*
Source: New York Times, Justices Side with Arizona Church in Dispute over Sign Limits

The U.S. Supreme Court heard this case in 2015, (it was the first Supreme Court case to address local sign regulations in over twenty years). Six justices agreed that Gilbert's Sign Code improperly distinguished between types of noncommercial speech based on the subject matter of the speech, i.e. the Code was facially content-based. The reason behind this decision is that Gilbert's Sign Code made several exceptions to the permitting requirement for signs, including, for example, exceptions for "political", "ideological", and "temporary directional signage for qualifying events", and regulated each of these forms of signage in different ways. A majority of the Court found that these distinctions

were regulated based on the signs' content, which is prohibited under the Court's First Amendment doctrine.

Further, because Gilbert's Code regulated signs based on the content or message of speech, the Code was, therefore, subject to what is called a "strict scrutiny" standard of review. Strict scrutiny requires that a compelling governmental interest must be demonstrated and that the regulations must be narrowly tailored to serve that compelling governmental purpose. The Court found that the Town failed to meet this standard and held that Gilbert's Sign Code was invalid. On the other hand, a regulation that is "content-neutral" is subject to "intermediate scrutiny", i.e. the regulation furthers a significant or important governmental interest that is unrelated to the suppression of speech, is narrowly tailored, and it provides ample alternative channels for communication.

Since the *Reed* decision, several lower courts have invalidated content-based regulations of noncommercial speech, particularly those relating to political signs (e.g. *Marin v. Town of Southeast*). The lower courts have also upheld several examples of content-neutral time, place, and manner regulations, including restrictions on painted wall signs (*Peterson v. Village of Downers Grove*) and a New York City prohibition on illuminated signage extending more than 40 feet above curb level (*Vosse v. City of New York*). In *Central Radio, Inc. v. City of Norfolk*, the lower court looked unfavorably at specific exemptions for artwork, and based on this decision, some cities have also chosen to not include flags within their sign regulations as they could be considered an ideological message (See further discussion below).

3. Implications of *Reed v. Town of Gilbert* to the City of Portland

The U.S. Supreme Court's decision in *Reed* has emphasized the need for local governments to ensure that their sign regulations are content-neutral. Interestingly, there is a divergence of opinions on what this means, and some First Amendment observers have suggested that the result in *Reed* will encourage local governments to take a more cautious approach to sign regulation that may more broadly suppress speech, while others predict that the decision will result in more freedom for sign owners to display signs with various messages.

In response to the *Reed* decision, and as a general recommended practice, the City of Portland's Sign Regulations should be amended to include several general provisions and principles intended to ensure they are constitutional, as listed below:

1. Include in the Code's Purpose Section confirmation that it is the City's intent to regulate signs and enforce the regulations in a content-neutral manner;

2. Make sure that the Purpose statements are clear and are linked to the regulations and to the City's Comprehensive Plan;

3. Review the sign permitting procedures to ensure they have a narrow focus, a review timeframe that is as short as possible, and the updated code includes clear and enforceable standards against which permit applications can be reviewed.

4. Reduce the number of exceptions as much as possible;

5. Add a substitution provision stating that a noncommercial message may be substituted for any commercial message to protect the City from mistakenly prohibiting the display of a non-commercial message (e.g. a sign with a political or real estate message), where a commercial sign would otherwise be allowed;

6. Establish regulations for signs based on the zoning districts in which they are located (i.e. residential, industrial, or commercial), and ensure the standards are based on the actual sign type and structure, rather than the message it conveys, e.g. regulate freestanding signs as "pylon signs", "monument signs", or "yard signs";

7. Limit regulations to only those which are enforceable and necessary for balancing property owners' needs with the public's interest in maintaining community character.

8. As much as possible, establish consistent standards for temporary and portable signs based on the zoning district in which they are to be located (i.e. residential or non-residential), and ensure the standards are based on the actual sign type and structure, rather than the message it conveys, e.g. regulate A-frame/sandwich board signs, feather signs, or banner signs;

9. Ensure that all words and phrases are clearly defined to enable consistent understanding and application of the sign regulations;

10. Include a severability clause for the Sign Code in addition to a severability clause for the entire Land Use Code;

11. Engage diverse community interests in the process of drafting the new sign regulations, such as business owners, sign makers and installers, residents, community groups, etc. The City has already initiated this outreach through the stakeholder interviews and the community workshop held on July 9, 2018 and will continue to engage with the interested residents in the months ahead as the Sign Code is developed and eventually presented for public review towards the end of the year.

12. As documented below, the existing sign code includes some content-based sign regulations. It is recommended that City planning staff consult

with the City's legal counsel to determine if enforcement of the City's existing sign provisions should be suspended (especially the enforcement of content-based standards) until the Sign Code is updated and content-based issues are resolved.

C. Portland Comprehensive Plan; Applicable Goals and Implementation Strategies

The City of Portland's Comprehensive Plan, *Portland's Plan 2030* adopted June 2017, establishes a comprehensive and long-term vision for the community. Six Policy Guides in the Portland 2030 Plan, including Historic Resources, Waterfront, Economy, Recreation and Open Space, and Transportation are directly related to the Sign Code.

1. Historic Resources

The Historic Resources Policy Guide supports policies to preserve Portland's rich community character and history. Goals that apply directly to and affect the implementation of sign regulations include:

- Promote historic preservation as a key economic, sustainability, and community development strategy; and
- Stabilize and enhance historic areas of the city by ensuring quality investment in existing structures and compatible infill development.

As amendments to the Sign Code are developed, consideration will need to be given to Portland's historic districts to ensure that signs complement the character of these places.

2. Waterfront

The Waterfront Policy Guide supports policies that ensure the continued opportunities and functional autonomy for marine economic activity and allow for private investment in pier and wharf infrastructure. Goals that apply directly to and affect the implementation of sign regulations include:

- Prioritize and promote Portland's unique mix of water-dependent, marine-related uses and compatible non-marine uses;
- Celebrate, promote, and protect Portland's lobster and fishing industry as a foundation of the region's economy and a feature of civic pride.

The Sign Code will address the challenges of commercial activity, while carefully balancing the needs of the commercial fishing industries and waterfront recreation.

3. Economy

The Economy Policy Guide focuses on business-based strategies for job creation, physical improvements, and grants for small businesses. Goals that apply directly to and affect the implementation of sign regulations include:

- Create economic prosperity by growing Portland's tax and employment base.
- Value innovation and creativity as cornerstones of the local economy and as central to Portland's uniqueness and diversity.
- Reinforce the waterfront as a key component of Portland's economic health, balancing traditional and emerging industries with tourism and recreation.

This Policy Guide emphasizes the need for aesthetic improvements to the City's commercial corridors to increase economic activity and encourage innovation and creativity.

Proposed amendments to the Sign Code will focus on enriching the visual character of commercial corridors in the City.

4. Recreation and Open Space

The Recreation and Open Space Policy Guide assures that public spaces a central part of community life and envisions them as centers of art, culture, and community gatherings. Portland's goal for recreation and open space is to "provide high-quality, well-designed, well-maintained, safe, and integrated parks, trails, public open spaces, and recreational opportunities accessible to all residents." Portland is committed to developing "uniqueness" when it comes to open space with specific implementations strategies focused on incorporating "creative design, public art, and placemaking wherever possible to enhance aesthetic value." Another implementation strategy is to "employ consistent signage to reflect distinct identities of elements of the open space system, as well as aid in wayfinding, while respecting historic district and neighborhood branding initiatives."

The proposed amendments to the Sign Code will as much as possible encourage creative design for signs in parks and open spaces while respecting the City's desires for minimizing visual clutter in City parks and maintaining cultural and historic character.

5. Transportation

The Transportation Policy Guide promotes a more walkable Portland by "invest[ing] in a walkable city through sidewalk maintenance, accessibility improvements, trail and path connections, snow clearance, lighting, landscaping,

traffic calming, enhanced street crossings, strong urban design, artistic elements, and wayfinding."

The proposed amendments to the Sign Code will assist in enhancing the pedestrian realm for pedestrians and cyclists and will help keep Portland's sidewalks unobstructed and visually pleasing for pedestrians, by for example, ensuring that signs are appropriately scaled for pedestrians.

6. Future Land Use

Portland 2030's plan for Future Land Use identifies goals, objectives, and policies to shape the future physical development of Portland to preserve, protect, and enhance Portland's current quality of life. While many of these goals and policies may be broadly interpreted to apply to and affect the implementation of the City's sign regulations, a few directly apply to signs, including the City's urban design principals which define Portland's physical character is "by a distinctive relationship between its topography, building character and fabric, and the natural landscape." The City recognizes the importance of providing excellence

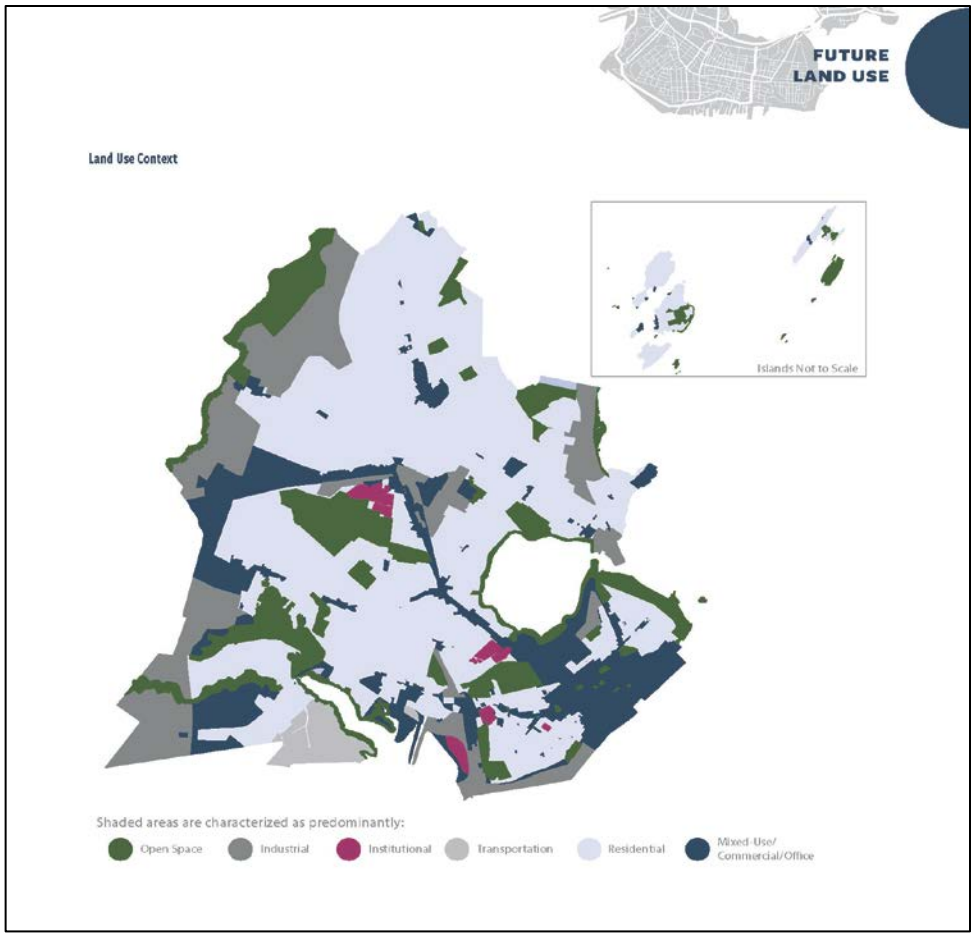


Figure C.1: Portland's Land Use Context

in "architectural quality and urban design commensurate with the image of Portland in history and today" as the City continues to grow.

The Future Land Use chapter also identifies priority nodes, areas of concentrated mixed-use activity, and priority corridors that highlight key corridors in the City. These elements, along with the waterfront, comprise of Portland's priority growth areas and indicate where new development would be appropriate for Portland. Finally, five land use principles are identified as illustrated in Figure C.2 and summarized below:

- One Portland;
- Complete Neighborhoods;
- Reinforce the Center;
- Support Our Waterfront; and
- Connect the Chain

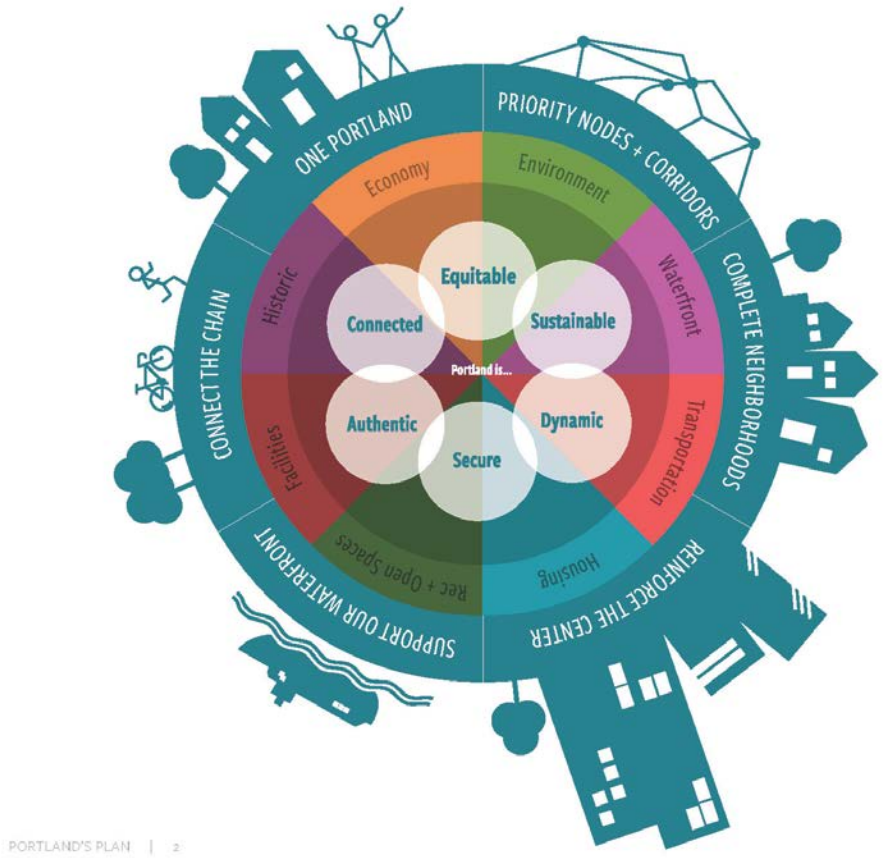


Figure C.2: The graphic illustrating the vision and land use principles in Portland's Plan 2030

D. Analysis of Existing Sign Regulations, Division 22 Signs

1. Background

Portland is currently undergoing a comprehensive update to the City's Land Use Code. Called the *ReCode,* its primary outcome will be to develop a new and accessible land use code that will provide a framework through which the vision of *Portland's Plan 2030* will be realized. Based on the draft Table of Contents provided by City staff in August 2018, the new Chapter 14 (Land Use Code) will be reorganized into the following Articles:

- 14-1: Introductory Provisions
- 14-2: Administration
- 14-3: Definitions
- 14-4: Nonconformities
- 14-5: Zones
- 14-6: Use Standards
- 14-7: Dimensional Standards
- 14-8: Overlay Zones
- 14-9: Shoreland Zone
- 14-10: Flood Plain Management
- 14-11: Site Plan Standards
- 14-12: Subdivision Standards
- 14-13: Impact Fees
- 14-14: Historic Preservation
- 14-15: Housing
- 14-16: Parking
- **14-17: Signs**
- 14-18: Alternative Energy
- 14-19: Pubic Art
- 14-20: Home Occupations
- 14-21: Regulations of Explosives

The Sign Code will be the first Article based on Division 22 (Signs) of the current code to be comprehensively updated as part of the *ReCode* update project. There are also standards and regulations specific to signs in the following locations in the City Code:

- Chapter 14 (Land Use):
  - Article III (Zoning);
  - Article V (Site Plan);
  - Article IX (Historic Preservation);
  - Article X (Alternative Energy);
- Chapter 25 (Streets, Sidewalks and Other Public Places); and
- The City of Portland Design Manual.

2. Division 22 (Signs)

The majority of Portland's Sign Regulations are located in Division 22 (Signs) of the City Code which is organized in 12 separate sections as shown in Table D.1.

Table D.1: Existing Division 22 (Signs)

Section	Purpose
14-366 - Purpose.	Describes the purpose of the Division.
14-366.5. Applicability.	Provides broad applicability statements including that a sign placed in the City must comply with the requirements of the Sign Code.
14-367 – Definitions.	Defines the terms used throughout the Sign Code.
14-368. Regulations.	Describes permitting, construction and maintenance standards for signs.
14-368.5. Permits.	Establishes the procedures and requirements for filing applications for permits and other approvals.
14-369. Computations.	Describes the calculations for the area, height, and number of signs.
14-369.5. Tables.	Describes the types of signs permitted in each zone, when permits are required, and standards for each sign type.
14-369.6. Signs prohibited under this division.	Prohibits signs not otherwise permitted in this Division

Table D.1: Existing Division 22 (Signs)	
Section	**Purpose**
14-370. Portable/temporary signs.	Lists the requirements for portable and temporary signs.
14-371. Exemptions.	Lists the sign types that are exempt from this Division.
14-372. Nonconforming signs.	Establishes the standards and procedures applicable to nonconforming signs.
14-372.5. Violations and enforcement	Establishes that failure to comply with Division 22 (Signs) is a violation and subject to penalties and grants the building authority with the responsibility for enforcement of the Division.

The existing provisions of Division 22 (Signs) have been reviewed and analyzed in the order in which they are found in the current Code. Analytical comments, suggestions, and recommendations are identified by *italic* font while references to the need for additional discussion with City staff and the City's legal counsel are indicated by a small City logo. The recommendations frequently refer to a new Section to be included in the Sign Code. An overview of the recommended Table of Contents is included in Section F. (Proposed New Table of Contents).

DIVISION 22, SIGNS

Sec. 14-366. Purpose

This Section establishes the purpose of the Sign Code. Four specific policy statements apply to the regulation of signs.

- *This Purpose Section will be expanded and updated to ensure consistency with the* Reed *case and should include, for example, confirmation of the City's intent to regulate signs in a content-neutral manner.*
- *A new Authority Section before the Purpose Section may be included in the updated draft of the Sign Code to establish the authority for the City of Portland to implement the City's sign regulations under applicable state law – to be confirmed with the City's legal counsel.*

Sec. 14-366.5. Applicability

This Section provides that a sign placed in the City must comply with the requirements of the Sign Code. Further, it includes regulations for the removal of commercial signs when a business closes, except that painted wall signs of historic significance are exempted.

- *An expanded Applicability Section will be included in the updated Sign Code Draft, and it is recommended it be broadened to include:*
  - *A statement that the Sign Code applies to all signs within the City limits;*
  - *A cross-reference to the permanent and temporary/portable sign sections of the updated Code;*
  - *The right to picket or protest (New); and*
  - *A new Subsection - Substitutions and Interpretations - to address that commercial speech is not favored over non-commercial speech. (New)*
- *The provisions for Exempt Signs currently included in Section 14-371 will be included here. It is very important to limit the number of exemptions as much as possible. There are a few* Reed *issues to resolve in the current Code regarding Exempt Signs to ensure the updated Code includes content-neutral standards and is consistent with the US Supreme Court's decision, e.g. political signs.*
- *The existing applicability language in the first paragraph will be retained and updated as needed.*

Sec. 14-367. Definitions

This Section defines the terms used throughout the Sign Code.

- *This Section will be inserted at the end of the updated Sign Code so that, assuming all definitions are included in the Definitions Chapter of the new Land Use Code, they can be removed from the Sign Code without impacting the numbering system.*
- *As the Sign Code is updated it will be important to consider the following:*
  - *Ensure that all definitions are* Reed *complaint and do not use content-based language, i.e. phrases that include "advertising" or "business", as examples.*
  - *Similarly, sign types that are defined by a specific use or activity, such as "real estate/construction/for sale or lease signs", etc. will be excluded.*
  - *When appropriate, clarifying illustrations or photographs will be included in the definitions.*
  - *Most definitions will be updated and, when needed, new definitions will be inserted. Definitions for terms that will no longer be used will be omitted. For example, as requested by staff, the definition of building identification sign will be updated to clarify (as much as possible given that the regulation cannot be content-based) that it should only include the name of the building and not the name of the occupant(s)).*
  - *Any standards included in the existing definitions will be removed and inserted in the body of the updated Sign Code.*
  - *Terms currently included in this Chapter that are also defined in the Land Use Code (e.g. Department) will be removed.*

- *As requested by staff, the definitions will clarify the distinction between changeable copy signs and Electronic Message Center (EMC) signs or animated signs.*

Sec. 14-368. Regulations.

This Section establishes a wide range of sign regulations that cover the following topics:

(a) A description of how and under what conditions signs are allowed on private property as provided in Table 1 of Section 14-369.5;
(b) Provisions for sign permits on private property, within public right-of-way, and for nonconforming signs;
(c) Sign design, construction and maintenance;
(d) Requirements for a signage plan;
(e) Exemptions to the prohibition on signs allowed in the public right-of-way;
(f) Signs in historic districts; and
(g) Signs in the Pedestrian Activities District (PAD) Overlay Zone.

- *With the proposed reorganization of the Sign Code, this Section will be removed, and the regulations will be moved into different sections and subsections. For example, all permitting requirements will be combined in a new Administration and Procedures Section as will the requirements for a signage plan, while the regulations specific to historic districts will be included in a new section specific to historic districts. Also, all exempt signs will be included in a new subsection of Applicability Section.*
- *As noted by staff, clarification will be provided on what signs will be allowed without a permit.*

Sec. 14-368.5. Permits.

This Section establishes the procedures and requirements for filing applications for permits and other approvals.

- *This Section will be included and rewritten in the updated Sign in a new Administration and Procedures Section with an appropriate cross-reference back to the application procedures in the Land Use Code, Division 14-2 (Administration and Procedures).*
- *Appropriate provisions specific to signs now in Article V requirements of Article V (Site Plan) will be inserted into the updated Sign Code with a cross-reference from Article V to the Sign Code.*
- *In consultation with staff, the new Administration and Procedures Section will include updated appeals procedures specific to signs, and possibly provisions for sign variances.*

Sec. 14-369. Computations.

This Section describes the how the area for certain sign types is calculated (i.e. individual signs, multi-faced signs, and awning signs), how sign height is determined, and the number of signs that are allowed.

- *These standards, updated as needed and illustrated, will be included in a new General Requirements for All Signs section.*

14.369.5. Tables.

This Section is generally divided into two parts (i.e. Table 1 and Table 2 and following sub-tables) as described below:

- **Table 1** includes a comprehensive list of all sign types and whether or not they are permitted within the zoning districts. Sign types are divided into Freestanding, Building, and Miscellaneous Signs. Detailed notes with additional standards are included after Table 1.

- **Table 2** is a series of tables from Table 2.1 to Table 2.14 that provides standards (e.g. area, height, setbacks, number of signs) for Freestanding Signs and Building Signs arranged by zoning district and in one case (gas stations) by use. Other applicable regulations are included after Table 2 relating to historic districts, signs subject to site plan review under Chapter V (Site Plan), and signs in the Pedestrian Activities District (PAD) Overlay Zone.

The recommendations for this Section are divided into three general categories that include recommendations specific to Table 1 and Table 2, and general recommendations specific to the new proposed structure of the Sign Code.

- ***Table 1:*** *While the intent of this table is good in that it shows in a simple and structured manner what signs are permitted across the City's zoning districts, it is difficult to read, the legend is not intuitive, and the tables are hard to quickly comprehend. The several end notes (11) also make the standards in the table challenging to apply.*
- *A similar table may be inserted into the new code to show in what zones various sign types are allowed. However, it will be simplified, updated as necessary based on the final types deemed to be appropriate in Portland, and a distinction will be made between permanent and temporary/portable sign types.*
- *All signs that are prohibited will not be duplicated in the table, and they will be described in a new subsection (Prohibited Sings) within the General Restrictions for All Signs Section.*

- *As much as possible, the end notes will be simplified and reduced to the fewest number practicable by including the standards currently in the end notes into the sign code standards throughout the Sign Chapter. For example, end note (i) regarding window signs will be included with all the standards specific to window signs.*
- *The question of how and whether "flags" should be included in the Sign Code was discussed with City staff. This is because national flags can be considered ideological signs, and therefore, some communities have chosen to be silent on flags in their sign code, while others have decided that the risk of a potential challenge is low enough that they have been included as an exempt sign. For now, staff has confirmed that the Sign Code will be silent on flags.*

- ***Table 2:** The idea of providing separate tables for the sign standards applicable to each zoning district is good as it ensures that the Sign Code is based on a content neutral foundation. It is recommended that this approach will be carried forward into the update Sign Code with modifications as necessary. For example, in some zones revised standards may be appropriate (e.g. to address the setback requirement for freestanding signs) and will be presented for staff's consideration. It is also conceivable that the standards will be combined into a single table organized vertically by zone and horizontally by standards for area, height, number of signs, etc.*
- *To ensure that the updated Sign Code is as content-neutral as possible, it is recommended that the sign standards for gas stations be removed and incorporated into the zone(s) in which gas stations are allowed. A new sign type (Service Island Canopy Sign) will also be added.*
- *The regulations for Ballfield Booster or Sponsor Signs will be incorporated into the new Standards for Temporary/Portable Signs Section.*
- *We recommend that the standards for scoreboards be removed from the sign code as these are presumably unique to City operated recreation facilities if they are reviewed and approved by the Recreation Director. This would also eliminate any content-based regulation specific to the area of the scoreboard that may be dedicated to commercial sign content. Further discussion with staff may be needed during the review of the Administrative Draft Sign Code.*
- *Our recommended approach, which is detailed below, will be to develop a table that establishes the maximum sign area, height and number of signs permitted by zoning district for the different types of building mounted and freestanding signs. Once the maximum area for signs for a building or property is established, then any combination of sign types that are either building mounted or freestanding signs may be allowed, provided the maximum area limitation is met. Separate tables will precisely define the standards applicable to each sign type. Recommendations on what sign types are appropriate based on the character and context of various areas of the City will also be developed.*
- *We further recommend that the standards should be pulled apart into two categories – Permanent Signs and Temporary Signs. This is important because*

based on the Reed *decision - which was mostly germane to temporary signs - a higher standard of judicial review (strict scrutiny) applies to temporary signs than it does to permanent signs where only intermediate scrutiny may be applied.*

- *The Permanent Signs Section will be organized into residential zoning districts, commercial zoning districts, mixed-use zoning districts, and industrial zoning districts with further breakdowns by zoning district as needed. As an organizing principle it is good to provide broad standards for sign height and sign area that apply by zoning district (or as needed by use). Note that the actual method of determining sign area or height will be placed elsewhere in the update Sign Code in the General Requirements for All Signs Section. These standards would establish the maximum height and area limitations within each zoning district for building mounted and freestanding signs and would be established in a single Table. Portions of two example tables are inserted below. One of the tables from the City of Lompoc, CA (Figure D.1) utilizes zone-based distinctions only while the other table from the City of Flagstaff, AZ (Figure D.2) includes zones and use-based distinctions for these standards. Based on direction received from staff to allow more signage for institutional uses in residential zones than would otherwise be permitted for a residence, the Flagstaff approach will be pursued.*

Table 17.108.060.A: Permanent Sign Standards for All Residential Zones[1,2]

Sign Type	Maximum Number[3]	Maximum Area	Maximum Height	Lighting Allowed?	Permit Required?	Additional Requirements
Flag	1 per parcel	35 sf	limited to the zone's allowable building height	external	yes	17.108.060.C.3.f
Monument Sign	1 per street frontage[4]	24 sf	5 feet	Limited, external, down-directed	yes	17.108.060.C.4
	1 per parcel[5]	4 sf	3 feet		no	
Wall Sign	1 per street frontage[4]	24 sf	Not displayed above the second story	Limited, external, down-directed	yes	17.108.060.C.9
	1 per parcel[5]	4 sf			no	

[1] Not allowed in the R-1 or R-2 zones unless approved with a precise development plan.

[2] Parcels in the MU Zone that contain only residential uses shall be subject to the standards in this Table.

[3] Additional signs may be allowed if approved with a Sign Program.

[4] Allowed for signs identifying a multi-family building or complex by name and/or address. Only one 24 square foot sign is allowed per street frontage, which may be either a wall or monument sign.

[5] Allowed for signs identifying or providing direction to the manager's office of a multi-family building or complex or similar directional signs.

Figure D.1. Example of a table providing standards for permanent signs for all residential zones

Table 10-50.100.060.A: Standards for Permanent Signs by Use				
Land Use	**Allowed Sign Types**	**Number of Signs[1]**	**Max. Ht. (in ft.)**	**Max. Area (sq. ft.)**
Single-family Residential or Duplex (includes Home Occupations and Bed and Breakfasts)				
	Building Mounted	1[2]	6	6
	Freestanding	1[2]	3	6
Single-family Subdivision, Multi-family Developments, Manufactured Home Parks				
	Building Mounted	1	4	2
	Freestanding	1[3]	6	24
	Landscape Wall	1[3]	4	24
Master Planned Communities				
	Building Mounted[4]	N/A	N/A	N/A
	Freestanding	1[3] per major vehicular entrance	8	36
	Landscape Wall	1[3] per major vehicular entrance	8	36
Institutional Use in all Zones				
	Building Mounted[4]	1	6	24
	Freestanding	1[3]	4	32
	Landscape Wall	1[3]	4	32
Non-Residential Use in Commercial or Industrial Zone – Live/Work, Single Tenant Building, and Detached Buildings within a Multi-Tenant Development or Shopping Center[5]				
	Building Mounted – Single Frontage[4]	Limited by max. sign area	25	1 sq. ft. to 1 linear ft. of primary building frontage - 100 sq. ft. max.
	Building Mounted – Multiple Frontages[46]	Limited by max. sign area	25	1 sq. ft. to 1 linear foot of primary building frontage – 100 sq. ft. max. 1 sq. ft. to 0.5 linear foot of auxiliary building frontage – 80 sq. ft. max.

Figure D.2: Portion of a table providing standards for permanent signs for all various zones and uses within zones

Further discussion with staff may be needed during the review of the Administrative Draft Sign Code.

- *The approach for improved organization suggested above will help to simplify and better organize the standards. As much as possible the existing standards included in Table 2 will be carried forward into the updated Sign Code, although as needed new or updated standards will be proposed, e.g. for signs on a corner of a building "not readily visible" at the same time. Also, updated standards for cabinet signs and where they are appropriate will be addressed.*
- *Miscellaneous signs in Table 2.14 (Gas Station Signs – All Zones Where Permitted): As recommended above, the standards for gas station signs will be incorporated into the zone(s) where this use is permitted. However, it is recommended that the*

level of regulation for the amount of signage on individual gas pumps should be eliminated, although regulating "pump toppers" as a type of temporary sign may be appropriate.

- *It is also recommended that some allowance for "incidental signage" on buildings and structures should be included in the updated Sign Code to address, for example, exit signs, warning signs, credit card signs, etc.*

- *City Staff noted some specific issues with the existing sign code that warrant attention, greater clarity, and a balanced approach in the new code, including:*
  - *Signs on multi-level multiple-tenant buildings, specifically the need for regulations on where signs should be placed relative to the floor on which the tenant is located.*
  - *Off-premise signs (heads of piers, back parcels, A-frames). While there may not be consensus to prohibit A-frame signs on sidewalks it is important to resolve issues with clutter, placement, and enforcement.*
  - *Update and provide new standards for sign illumination that will be included in a new Section – General Requirements for All Signs, Illumination.*
  - *Address EMCs and in what commercial corridors they may be appropriate, under what conditions, and provide standards for brightness and frequency of message changes, and standards for appropriate quantity and scale of these signs.*
  - *Provide improved standards for B7/Bayside/Marginal Way.*
  - *Off-premise wayfinding signs within the public ROW to provide advertising opportunities for business located down an alley or wharf (Installation of these signs will most likely involve coordination with Portland Downtown as this agency, or others, may contribute to the installation and maintenance of these signs).*
  - *Table 2.8 – update the regulations on free-standing signs.*
  - *The restrictions on roof-mounted signs should be maintained.*
  - *Greater clarity on window signs, including neon signs.*
  - *Prohibit feather signs.*
  - *Clarify which signs are not regulated by the Sign Code – such as traffic, public wayfinding, public safety signage (this is addressed under 14-371, but will be expanded).*
  - *Distinction between pole banners and wall banners in definitions and approval process.*
  - *Include standards to allow legal non-conforming businesses in residential zones to have reasonable signage.*
  - *Make clear distinctions in the sign code between walkable and more auto-oriented environments where necessary, while ensuring quality visual character is maintained citywide.*

Sec. 14-369.6 Signs prohibited under this division.

This Section states that signs not permitted in this division or that are exempt under Section 14-371 (Exemptions) are prohibited.

- *A list of prohibited signs will be included in a new Prohibited Sign subsection in the General Requirements for All Signs Section.*

Sec. 14-370. Portable/temporary signs.

This Section establishes the standards for portable and temporary signs on private property and includes additional standards for freestanding portable and temporary signs. Additional provisions specific to portable signs in the public right-of-way and to exclude the area of portable and temporary signs from the area of permanent signs are also included.

- *As noted previously, it is important to make a distinction between permanent and temporary/portable signs because, based on the* Reed *decision which was mostly germane to temporary signs, a higher standard of judicial review (strict scrutiny) applies to temporary signs than it does to permanent signs where only intermediate scrutiny may be applied.*
- *The existing standards in Section 14-370 provide general standards for portable and temporary signs in a content-neutral manner (Some content-based temporary sign regulations occur in Section 14-370.7 – see the next bullet below).*
- *It is recommended that a substantially different approach to the updated Sign Code should be taken to ensure that all portable/temporary sign types are regulated under the same time, place, and manner regulations, regardless of the sign's message. In other words, temporary real estate signs, political signs, or commercial advertising signs must be regulated in the same way.*
- *Regulations for temporary or portable signs should, therefore, be placed into a separate Section of the updated Sign Code which will be organized as follows:*
    - *Include a separate and clearly written Purpose Section that specifically applies to temporary/portable signs.*
    - *For the purpose of this Section a temporary sign would include a wall banner which, because it is a de facto wall sign and cannot be easily removed when a business closes, will be an example of a temporary sign type for which a permit may be required so that the length of time that the banner is displayed can be regulated. As noted by staff, consideration will also be given to regulating banner size based on the size of a wall plane on which the banner may be placed, i.e. proportionally scale the size of the banner to the wall plane. Staff has also suggested that permits for Type II and Type III Yard Signs (See Figure D.3), may also be appropriate.*

      Portable signs on the other hand, would include sign types that are not permanently attached to the ground, such as A-frame signs, Type I yard signs

(See Figure D.3), feather signs or vertical banners (See Figure D.4), umbrellas, etc. Certain types of portable signs, e.g. wind signs or feather signs, may be prohibited. Staff has recommended that permits should be required for A-frame signs, especially if they are placed within the public right-of-way in downtown Portland.

Type I Yard Sign



Type II Yard Signs





Figure D.3: Examples of Yard Signs

Type III Yard Sign







Figure D.4: Examples of Feather or Vertical Banner Signs

- *Include a Section that contains regulations applicable to all temporary/portable signs. These could include that only wall banners require a permit, a statement that portable signs are not subject to time limitations (only banners are), and location regulations for these types of signs.*
- *A Section specific to portable signs, arranged as a series of easy-to-use tables, would include time, place and manner standards for portable signs organized by zoning district, including for example, standards for period of use, prohibited elements, design and construction, number of signs, areas of signs, etc.*
- *The standard for area of signs is important because the Code would establish a maximum area for all portable signs that would be allowed on a parcel. As the maximum area for each type of portable sign is regulated, it is easy then for City staff to determine if too many signs are erected at any one time. As the message/content of the portable signs is not regulated, provided the maximum area limitation is satisfied, any combination of signs with an ideological, political or commercial message may be displayed at any one time.*
- *Similar to the approach for permanent signs, tables will be inserted that provide base standards by zoning district and for the height, width, area and other standards applicable to individual temporary and portable signs. A separate table would be inserted with standards for temporary wall banners. Staff has recommended that a standard should be included that a temporary or portable sign must be removed when the event or purpose for which it is displayed has ended. Examples of these tables are provided on the following pages.*

Table 16.07.030-A: Standards for All Portable and Temporary Signs on Private Property	
Applicable to All Zoning Districts	**Standard**
Placement	Must not create a hazard for pedestrian or vehicular traffic. Must not be placed on a sidewalk or pedestrian pathway. See Table 16.07.030-B (Standards for Specific Portable and Temporary Sign Types).
Height and width	Refer to Table 16.07.030-B (Standards for Specific Portable and Temporary Sign Types) for height and width standards for individual portable and temporary signs.
Prohibited elements	Any form of illumination, including flashing, blinking, or rotating lights. Animation. Reflective materials. Attachments, including, but not limited to, any balloons, ribbons, loudspeakers, etc.
Design and construction	Professionally crafted. Of sufficient weight and durability to withstand wind gusts, storms, etc. Must be maintained. Refer to Subsection 16.04.050.C (Maintenance).
Commercial, Industrial, and Other Non-Residential Zoning Districts	
Period of use	No limitation, except for wall banners and A-Frame Signs. Refer to Table 16.07.030.B (Standards for Specific Portable and Temporary Sign Types).
Area of all portable signs at any one time	Max. 24 SF per business; excludes the area of temporary window signs and temporary wall banner signs.
Number of Signs	Unlimited; except the total sign area of all portable signs must not exceed 24 SF per business. Exception: Multi-tenant shopping centers or offices – Max. 2 portable signs per 150 linear feet of property frontage not to exceed 24 FT combined.
Permitting	Sign Permit is not required, except for wall banner signs.
All Residential Zoning Districts	
Period of use	No limitation.
Area of all portable signs at any one time	Max. 16 SF per lot or parcel.
Number of Signs	Unlimited; except the total sign area of all portable signs must not exceed 16 SF
Permitting	Sign Permit is not required.

Figure D.5: An example of a table with standards for temporary/portable signs arranged by zoning district

Table 16.07.030-B: Standards for Specific Portable and Temporary Sign Types				
	Standard			
Portable Sign Type[1]	**Height (Max.)**	**Width (Max.)**	**Area (Max.)**	**Zoning District where Allowed**
A-Frame Sign	42"	24"	7 SF	Only allowed in non-residential zoning districts.
Additional Standards for A-Frame Signs: 1. Must maintain a minimum 4-foot wide pedestrian walkway. 2. Not placed on or over any public street, sidewalk, parking lot, or required landscape area. 3. Only be displayed during business hours and must be removed during non-business hours.				
Balloon Displays	20 FT or above a roofline	18" in diameter	–	Only allowed in the Auto Mall Zoning District in the Eucalyptus Business Park and for new and used vehicle sales uses
Additional Standards for Balloon Displays: 1. Balloon displays shall only be allowed in conjunction with an approved Promotional Sale. 2. Must be maintained in original display conditions at all times. 3. Only allowed on Saturdays, Sundays and the following holidays: New Year's Day, President's Day, Memorial Day, Independence Day, and Labor Day. 4. Max. 1 balloon display allowed per business. 5. May be displayed for max. 3 consecutive calendar days. Min. 30 calendar days between display periods. 6. Must be placed on and tethered to the ground and must not be placed on or over any public street, sidewalk, parking lot, or required landscape area. Not allowed on a rooftop. 7. Must always be maintained in original display condition. 8. Must not be cut loose or allowed to fly freely.				
Yard Sign – Type I	4 FT	2 FT	3 SF	Allowed in all zoning districts.
Additional Standards for Yard Signs – Type I: 1. Installed securely in or on the ground. 2. Placed on private property only and not be allowed within any street right-of-way or on any public property.				
Yard Sign – Type II	6 FT	2 SF	4 SF	Allowed in all zoning districts.
Additional Standards for Yard Signs – Type II: 1. Installed securely in or on the ground. 2. May be placed on private property only and shall not be allowed within any street right-of-way or on any public property.				
Yard Sign – Type III	6FT	8 FT	32 SF	Only allowed in non-residential zoning districts.
Additional Standards for Yard Signs – Type III: 1. Installed securely in or on the ground. 2. May be placed on private property only and shall not be allowed within any street right-of-way or on any public property.				
Number of Signs. See Table 16-07.030-A (Standards for All Portable and Temporary Signs on Private Property).				

Figure D.6: An example of a table with detailed standards for various temporary/portable sign types

- *As discussed with City staff, the updated Sign Code will encourage creative design for signs in parks and open spaces while respecting the City's desires for minimizing visual clutter in City parks and maintaining cultural and historic character. Further, no temporary or portable signs will be allowed on City property, including City-owned parks and open spaces, beyond that required under State law, or limited temporary event signs, provided they can be removed in a timely manner.*
- *City staff have clarified that under the new Maine statute (Title 23-A, Section 1913-A) that went into effect on August 1, 2018, and subject to various requirements, temporary signs may be placed in all State and City rights-of-way for a maximum of 12 weeks per calendar year. This law will have implications to the approach required to be taken by the City for temporary and portable signs to ensure that the City's sign regulations are as content-neutral as possible. As amendments to the Sign Code are drafted, further discussions with City staff will likely be needed to ensure the City's desires are accomplished.*

Sec. 14-370.7 Special sign types

This Section lists the requirements for window signs, real estate/construction/for sale or lease signs, works of art containing signage, building markers, seasonal sales/special activities signs, and directory signs.

- *Window signs. As described above, tables will be created that provide standards and regulations specific to different types of portable or temporary signs. The standards for temporary window signs will be included in these tables, updated and expanded as needed while standards for permanent window signs will be included in a similar table in the permanent sign section of the updated Code.*
- *The requirements for real estate/construction/for sale or lease signs and seasonal sales/special activities are content-based and will be rewritten and included in the updated Sign Code as content-neutral time, place, and manner regulations.*
- *Works of art containing signage, i.e. murals. The regulation of murals can be extremely tricky, especially when the mural includes signage, as some in the City currently do (e.g. the CAT Ferry Building). At a minimum, a new definition of a mural will be recommended and regulations clarifying that any commercial message included within a mural will be considered as a wall sign. Once the Administrative Draft of the updated Sign Code has been prepared, further discussion with staff and the City's legal counsel may be necessary.*
- *Building Markers. As no permit is required for a building marker these provisions will be moved into the Exempt signs section.*
- *Directory signs. As described above, tables will be created that provide standards and regulations specific to different types of permanent signs. The standards for directory signs will be included in these tables, updated and expanded as needed.*

Sec. 14-371. Exemptions.

This Section lists the signs that are exempt from regulation under this Division.

- *As stated previously the number of exempt signs will be reduced as much as possible and all exempt signs will be included in a new subsection within the Applicability Section of the updated Sign Code.*
- *Staff questioned whether the Sign Code should regulate what can be viewed from the public way or all signs. A typical practice is to exempt signs that are not readable from off the property where the sign is located as well as signs within a building. Similarly, signs located within City recreation facilities such as sponsorship banners for local sports teams may also be exempted.*

Sec. 14-372. Nonconforming signs.

This Section defines nonconforming signs and establishes the regulations and procedures applicable to them.

- *This Section will be included, and updated as needed, in a new Nonconforming Sign Section.*
- *As requested by staff, a recommendation for allowing legal non-conforming commercial properties/businesses located in residential zones to have adequate signage will be provided.*
- *Updates to the nonconforming sign section will be made to reflect current staff practices, including for example, reconsideration of Section 14-372(b).*

Sec. 14-372.5. Violations and enforcement.

This Section establishes that failure to comply with Division 22 (Signs) is a violation and subject to penalties and grants the building authority with the responsibility for enforcement of the Division.

- *This Section will be included and updated as needed in a new Enforcement Section to reflect the new departmental organization of the City.*

Other General Recommendations

- *As noted previously, the updates to the Sign Code are the first to be prepared for inclusion into the City's comprehensive update of the Land Use Code called the ReCode. As that work is in progress, for now the updated Sign Code will refer to the City's existing zones established in Article III (Zoning) of Chapter 14 (Land Use) in the City Code. Once the new zones have been established, an update to the Sign*

Code will be necessary to reflect any changes to the zones that may occur through the update process.

- *With the update of the Sign Code, existing language and terminology will be refreshed, updated, and modernized consistent with established code writing best practices. Some examples of how this will be accomplished include:*
  - *Terms in the existing code such as "hereunder" or "thereof" will not be used.*
  - *It is recommended that the word "must" will be used to impose a condition or a standard and "shall" will be used to impose a duty. (e.g., The Director shall review all applications for a variance). To be confirmed with City staff.*
- *The Sign Code lacks illustrations and photographs to clarify standards and how they are applied. It is recommended that illustrations and photographs should be inserted throughout the Code to make it user-friendly and easier for staff to explain, interpret and apply. For example, illustrations will be inserted showing how sign height and sign area for all types of signs (including perhaps 3-D signs) are measured, as well as examples of well-designed signs.*
- *The text will be simplified, duplicative text will be removed, and appropriate cross-references will be inserted.*
- *While many of the standards included in this Chapter are appropriate, they are poorly organized and incomplete. Most of these standards will be included in the updated Sign Code and reorganized into relevant sections based on the updated Table of Contents.*
- *As described in the comments gathered during the July 9, 2018 stakeholder interviews and in the community workshop, context-based sign regulations for the City of Portland will be developed to reflect the need for varying sign regulations based on the character and context of the area in which they are located. Further, the idea of a sign overlay to apply sign standards applicable in a walkable environment such as the Portland Downtown to existing more auto-oriented environments, but which are planned to become more walkable, such as Woodfords Corner, will be explored.*
- *As discussed with City staff, ideas for incentivizing good sign design will be explored using a Comprehensive Sign Program approach. Examples of different approaches to incentivizing good sign design from two cities have been provided to City staff for review (i.e. from the City of Flagstaff, AZ (a very comprehensive approach where sign quality and attention to detail is highly valued in the community) and the City of Lompoc, CA (a simpler and less complicated approach)). As discussed with staff, the former comprehensive approach will be included in the update Sign Code.*

E. Analysis of Other Documents Related to the Sign Code

1. Introduction

In addition to the sign regulations in Division 22 (Signs), the Portland City Code includes standards and regulations specific to signs in the following Articles and Sections:

1. Chapter 14 (Land Use)
   a. Article III (Zoning)
   b. Article V (Site Plan)
   c. Article IX (Historic Preservation)
   d. Article X (Alternative Energy)
2. Chapter 25 (Streets, Sidewalks and Other Public Parks)
3. The City of Portland Design Manual
4. The Historic Resource Design Manual

As much as possible these sign standards and regulations will be consolidated and/or cross-referenced within the updated Sign Code.

2. Article III (Zoning)

Zones that cross reference Division 22 without specific standards. A careful review of Article III (Zoning) has determined that a number of existing zoning districts include a cross-reference to Division 22 (Signs) without including any additional sign standards. These include:

- Residence-Professional Zone
- B-1b Neighborhood Business Zone
- B-4 Commercial Corridor Zone
- I-L and I-Lb Industrial Zones
- I-M, I-Ma, and I-Mb Industrial Zones
- I-H and I-Hb Industrial Zones
- Waynflete School Overlay Zone
- Eastern Waterfront Port Zone
- Waterfront Central Zone
- Waterfront Port Development Zone
- R-P Resource Protection Zone

USM, University of Southern Maine Overlay Zone. Section 14-152.6. Signage provides specific sign standards for the USM Zone:

- Signs shall be designed with the sign standards created by the university.
- Banners are only allowed for advertising university of events. Displays are limited to four weeks before the event and one week after.

B-2 and B-2b Community Business Zones. Section 14-183 (Conditional uses) lists the conditions for certain permitted uses in the B-2 and B-2b Zones. One of these conditions states that signs shall not adversely affect visibility at intersections or access drives.

A-B Airport Business Zone. Section 14-200 (Other requirements) prohibits temporary freestanding advertising signs in the A-B Zone.

B-3, B-3b, and B-3c Downtown Business Zones. Section 14-221 (Other requirements and standards) states signs within the pedestrian activities district (PAD) overlay zone or in areas designated as PAD encouragement areas shall be consistent with the Downtown Urban Design Guidelines (now the City of Portland's Design Manual).

O-P Office Park Zone. Section 14-230.13 (Development standards) states:

- Development proposals shall identify all proposed signage.
- Signs shall be designed in proportion and character with the building facades.
- All signs shall be constructed of permanent materials and shall be coordinated with the building and landscaping design using appropriate materials and finishes.

Section 14-230.15 (Other requirements) prohibits temporary freestanding advertising signs in O-P Zones.

MMC Maine Medical Center Institutional Overlay Zone. Section 12-282 (Maine Medical Center Institutional Overlay Zone Regulatory Framework) establishes requirements for a unified campus-wide Signage Plan stating that signs be designed in accordance with this plan, in proportion and character with building facades and adjacent street typology and coordinated with the building and landscaping design.

- *The cross-references to the sign standards from the zoning districts will be maintained and updated as needed.*
- *All standards for signs will be incorporated and updated as necessary into the new Code.*

3. Article V, Site Plan

Article V (Site Plan) establishes the standards and procedures for site plan review. There are three levels of site plan review, each with a different threshold for review. Level I and Level II site plan review approval is the responsibility of the Planning Authority while Level III site plan review is conducted by the Planning Board.

The construction or installation of any signage for which approval is sought requires a Level II Site Plan Review in compliance with Section 14-526(d)8.a.(iv). However, it is unclear if this reference is correct as it refers to Waiver Criteria and the Section 14-526.(e).2 does not appear to exist.

Subsection 14-526(d) Site Design Standards. This Subsection lists the site design standards for site plan review, including standards for signage and wayfinding. Subsection 14-526.(d).8 (Signage and Wayfinding) establishes applicable requirements for:

- **Historic Preservation.** This appears to be duplicative of the standards in Article IX as it also requires a certificate of appropriateness for signs within historic districts.
- **Commercial Signage and Directional Traffic Signage.** This Subsection establishes standards for the size, scale, proportions, design, materials, placement and source and intensity of illumination of all permanent or freestanding building signs.
- **On-site directional traffic signage.** This Subsection allows on-site directional traffic signs to ensure traffic safety.
- **Wavier Criteria.** This Subsection establishes the criteria to obtain a waiver from site plan review.

- *There are several outdated references to the Waiver Criteria subsection that are no longer in Section 14-526(d)8.a.(iv). The updated Sign Code will correct and update all cross-references.*
- *Any duplications between the regulations in Article IX (Historic Preservation) and Chapter V (Site Plan) will be resolved in consultation with staff.*
- *In consultation with staff, appropriate provisions specific to signs now in Article V requirements of Article V (Site Plan) will be inserted into the updated Sign Code, including for example the "Exterior Lighting" and "Signage and Wayfinding" standards.*
- *All standards for commercial signs will be incorporated and updated as needed in the updated Sign Code.*

4. Article IX, Historic Preservation

A. Article IX (Historic Preservation)

Article IX (Historic Preservation) establishes comprehensive standards and regulations intended to identify, preserve, and enhance historic resources. This Article includes several regulations that are specific to signs that will need to be reviewed and possibly incorporated in the updated Sign Code. The following Sections in Article IX include specific regulations for signs:

Section 14-602 Definitions. In this Section a definition for signs is included which refers to Section 14-47 (Definitions). This section in turn refers back to the definition for signs in Section 14-367 (Definitions). Advertisings signs are also included in the definition of "Structure."

- *The definition of a sign in Article IX can be clarified by referring the sign definition in the updated Sign Code.*
- *As billboards are not allowed in Maine, consider removing billboards from the definition of a structure.*
- *Consistent with previous recommendations described in this Audit, all references to content-based sign regulations should be updated and/or eliminated, including the reference to "advertising signs".*

Section 14-634. Certificate of appropriateness required. This Section establishes standards for a certificate of appropriateness including for the installation of exterior lighting for commercial and institutional signage and awnings when placed on street-fronting facades of designated structures, and the installation or alteration of any exterior sign.

- *Consistent with previous recommendations described in this Code Audit, all references to content-based sign regulations should be updated and/or eliminated, including the reference to "institutional signage".*
- *Clarify if Section 14-634.1.b (moving of structures or objects) also applies to signs as the definition of a "structure" also includes "advertising signs".*

Section 14-651 Standards for review of new construction. Subsection (b).5 of this Section requires that new signs or a change in appearance of an existing sign located on a landmark or within a historic or historic landscape district and which is readily visible from public right-of-way or open space shall be consistent with the historic character of the landmark or district and need to comply with the guidelines in the design manual.

- *Regulations in this Section will be consolidated and/or cross-referenced within the updated Sign Code.*

Section 14-652.5. Standards for review of signage. This Section establishes the rules for regulating signs under an application for a certificate of appropriateness.

- *Regulations in this Section will be consolidated and/or cross-referenced within the updated Sign Code*

Section 14-677. Costs. This Section establishes the fees for applications described in this Article, including the fees for historic preservation sign review.

- *Regulations in this Section will be consolidated and/or cross-referenced within the updated Sign Code*

B. Design Guidelines for Signage Installations in Historic Districts. This Design Guideline for Signage Installations in Historic Districts (Guidelines) establishes guidelines for signage installations in historic districts. Any sign for which a certificate of appropriateness is required as defined in Article IX (Historic Preservation) is subject to these Guidelines. The Guidelines are divided into 11 sections summarized below and followed by illustrated examples:

- **General Design Concerns.** Establishes general guidelines for the integration of signs in the historic character of the area, and covers appropriate sign placement, materials, and design.
- **Size.** Establishes guidelines for the appropriate size of signs reinforcing the need for signs to be compatible with the scale of a building and its architectural features.
- **Placement and Location.** Establishes the appropriate placement and location of signs.
- **Communication.** Establishes guidelines for sign messages, typefaces, color, and shape.
- **Illumination.** Includes guidelines for appropriate illumination for signs.
- **Number of Signs.** Establishes guidelines and standards for the number of signs for ground floor and upper floor tenants. Limits are established for banners and other temporary signs of 30 calendar days.
- **Guidelines for Special Categories of Signs.** Establishes specific guidelines for awnings, canopies, and marquees that include signage; public information signs; painted wall art and signs; portable/moveable signs; temporary signs; real-estate signs; non-commercial banners; flags; pennants; on-site informational signs; signs on residential structures within residential zones; and off-premise signs.
- **Brackets and Installation**. Includes guidelines for the design and installation of brackets and attachments for all signs, awnings, conduit, etc. to avoid damaging architectural features on the building.
- **Master Signage Plans.** Requires that a master signage plan is required for all major projects as part of the site plan and/or historic preservation review process.
- **Maintenance.** Requires that all signs must be maintained.
- **Obsolete Signs**. States that all obsolete signs, except if determined to have historic significance, should be removed.

- *Although intended as guidelines, most of these requirements are written as guidelines although a few standards are also included. We recommend a discussion with City staff to determine if these guidelines are effective, whether consideration should be given to if they should be written as standards, and if, perhaps as guidelines, some to these should be applied City-wide, including for example, the guidelines for sign placement, communication, and maintenance.*
- *Consideration will be given to applying the standards for illumination, placement, and communication into the new General to All Signs Section.*
- *Consistent with previous recommendations described in this Code Audit, all references to content-based sign regulations will be updated and/or eliminated, including the reference to "real-estate signs."*
- *We are unclear on where the requirements for Master Signage Plans are located (are these the same as Signage Plans described in Section 14-368(d)?) and look forward to discussing these with City staff so they can be appropriately incorporated as needed into the updated Sign Code.*
- *In addition, standards for "ghost signs" (existing wall-painted signs that frequently have historic significance, will be developed.*

5. Article X, Alternative Energy

Section 14-761. General Standards. Subsection 14-761 (e)(7) states signs and advertising is an impact to wind energy generation and prohibits signs, advertisements, flags, or any decorative items on wind energy systems or associated facilities. The only exception is signs and advertising for the manufacturer's/installer's/owner's identification which cannot exceed 1 square foot in size, appropriate warning signs, or lights if required by the FAA.

- *This language can be added into the Exempt Signs section or cross referenced in the new Sign Code.*

6. Chapter 25, Streets, Sidewalks and Other Public Places

Division 2. Permit. Section 25-26 Required [Permit] states that portable sidewalk signs (i.e. A-frame signs) require a permit to be placed in the public right of way.

- *This language can be added into the Sign Permit Requirements Section or cross referenced in the new Sign Code.*

Standards for side walk sign permits in the sidewalk sign permit application instructions and checklist should be updated as necessary and placed in the new Sign Code.

7. City of Portland Design Manual

The City of Portland Design Manual, adopted in May 2010, consolidated several existing design guidelines into one document including:

- Downtown Urban Design Guidelines
- Pedestrian Activity District Map
- Downtown View Corridor Protection Map
- Downtown Height Overlay Map
- B1, B1b, B2, B2b Business Zone Design Standards
- University of Southern Maine (USM) Design Standards
- Bayside (B7) Design Standards
- B-6 Building Height Overlay and Building Envelopes
- R-5 Small Residential Lot Development and Multiplex Design Standards, R-6 Infill Development Principles and Standards
- IS-FBC Building Design Standards

Section 14-369.5 (Tables) in Division 22 (Signs) contains an outdated reference to the Downtown Urban Design Guidelines, "Signs located in the Pedestrian Activity District (PAD) Overlay and in the PAD Encouragement Areas in the B-3 are subject to the Downtown Urban Design Guidelines." This requirement now references Chapter (b) B-3 Downtown Business Zone in the Design Manual. This chapter states that design, placement, character, durability, and quality of "directional and informational signage" should "enhance the attractiveness, comfort, security, and usability of the pedestrian environment."

- *This language will be consolidated into the new Sign Code update, specifically in the new Section 14-11-060 (Sign Design Guidelines and Performance Standards).*

F. Summary of the Stakeholder Interviews and the Community Workshop

On July 9, 2018, LWC participated in a series of five interviews with stakeholder groups arranged by City staff. These stakeholders represented the following groups or organizations:

- Sign contractors/vendors
- Business representatives
- Local architect with an interest in historic preservation issues
- Member of a local neighborhood organization
- Members from three City Boards – Planning Board, Zoning Board of Appeals, and Historic Preservation Board.

Over the course of about an hour, these stakeholders, who have a direct connection with the existing Sign Code and sign issues in general in the City, shared their thoughts and observations in an informal discussion.

On the evening of July 9, 2018, staff arranged a community workshop in a meeting room at City Hall which was attended by six residents. This workshop provided staff and LWC with an opportunity to introduce the Sign Code update project, describe its purpose and what is hoped to be achieved, describe the next steps in the process, and to gather ideas, information, and comments on the existing sign code. An exercise in which attendees could comment on various sign types and designs was also conducted.

As part of the presentation in the community workshop, ten general themes and ideas from the previous stakeholder interviews were presented. These comments are included in Table F.1 arranged in no particular order of importance. They closely align with the observations made in the community workshop.

Table F.1: What We Heard – Comments from Stakeholder Interviews
Organizational issues – the existing sign code is hard to use, lacks illustrations, and is out-of-date
Generally, standards are working, and signs are the right size
Clearly some standards need to be updated to reflect new technologies and to provide clarification
Keep the character of Portland – the passion for the uniqueness of the City is very apparent
Streamline permitting – more efficient, easier, and faster
Flexibility is key to allow for unique circumstances
Certainty is also important
Context-based signage standards – signs need to reflect the character of the area in which they are located
Strong consistent enforcement is important
Community residents are clear about what types of signs are not wanted

Some other general themes, issues and comments made by the participants in the stakeholder interviews and community workshop (including comments made on the sign types handout) are summarized below:

1. **Code structure and organization**
    a. Simplify the code and make it as easy to use as possible with tables and illustrations.
    b. Provide more flexibility within the code to allow more creativity and to accommodate unusual conditions, e.g. a comprehensive sign program with incentives.

2. **Permanent and Temporary Sign Standards**
    a. Much discussion on A-frame signs in the right-of-way in the downtown area and along the wharf; continue to allow them but perhaps with more regulations on placement as they are important for bringing a sense of vibrancy to the street.
    b. Review the setback for signs from the property line.
    c. Develop context-based sign regulations so that the standards for the downtown area and historic districts are different than in more conventionally zoned suburban parts of the City, i.e. a distinction between walkable and drivable environments.
    d. Allow a wider variety of materials to make attractive and long-lasting signs without maintenance issues.
    e. Scale the size of building mounted signs to the building/wall on which they are located.

f. Consistency of sign design within a development is important.
g. Allow more driveway directional signs.
h. General consensus that vertical banners, tube/wind signs are not appropriate in Portland.
i. Neon – generally not supported, but OK for signs in windows.
j. EMCs – probably OK in certain areas of the City, but not in the downtown. Add more comprehensive illumination standards.
k. Much of the current code generally works – but some refinements are needed.
l. Include more comprehensive standards for sign types like blade signs, suspended signs, painted wall signs, awning signs, etc.
m. Determine how to allow signs for businesses located down an alley or on the wharf away from a street.
n. Resolve the issue of a building name also being the name of the business located within it.
o. Allow more opportunities for temporary signs to promote events in parks and similar public spaces.
p. Important to maintain the City's historic signs.
q. Signs made of individually letters, which may be illuminated, were preferred, but should not be required.
r. Pole signs were generally not supported.

3. Administration and Procedures

a. Update the appeals process and add a variance process.
b. Need a consistent approach to enforcement – City does not enforce its rules and a few bad actors create problems.
c. Simplify and clarify the sign permit approval process.

4. **Other General Comments**

a. Balance flexibility and creativity with need for regulations – maintain a mix of art and business.
b. Do not be too restrictive.
c. Need stronger standards requiring signs to be maintained.
d. It is important to maintain Portland's character and uniqueness and express this in the sign code.

G. Proposed New Table of Contents

To address the City's needs for a comprehensive, yet logically organized and easy-to-use Sign Code, it is recommended that a new structure and organization for the Code be implemented. The comprehensive update to the City's Land Use Code (*ReCode*) includes the Sign Code as Article 14-17 (Signs). A draft new Table of Contents is summarized in the Table below (some sections may be reorganized as the updated Sign Code is drafted) with brief explanatory notes in the right-hand column.

Article 14-17 Signs		
14-17.1	**General Provisions**	
14-17.1.1	**Purpose**	Establishes the purpose of the Sign Code
14-17.1.2	**Authority**	Establishes the authority to implement the regulations of the Sign Code
14-17.1.3	**Applicability**	
14-17.1.3.A	Applicability	Establishes how the Sign Code applies
14-17.1.3.B	Substitutions and Interpretations	Explains how and what review authority may interpret the Code
14-17.1.3.C	Exemptions	A shortened list of signs that are exempt from the Code
14-17.1.4	**Severability**	Important legal provision to provide a severability clause
14-17.2	**Administration and Procedures**	
14-17.2.1	**Review Authority**	Explains who has review authority for the Sign Code
14-17.2.2	**Applications and Fees**	Describes the process for applications for sign permits
14-17.2.3	**Sign Permit Requirements**	Establishes the permit requirements for permanent signs and temporary/portable signs (may cross-reference to the Land Use Code's Administration Section) and will include Site Plan Review
14-17.2.4	**Variances**	Possibly includes procedures for variances from the sign requirements when hardships exist
14-17.2.5	**Appeals**	Includes the procedures for appeals
14-17.3	**General Restrictions for All Signs**	
14-17.3.1	**Location Restrictions**	Includes restrictions on where signs may be placed
14-17.3.2	**Prohibited Signs**	Lists all prohibited sign types
14-17.3.3	**Display Restrictions**	Includes display restrictions applicable to all sign types

14-17.4	**General Requirements for All Signs**	
14-17.4.1	**Sign Message**	Important statement regarding a sign message and substitution of a sign message
14-17.4.2	**Sign Measurement (Area and Height)**	Establishes the rules for measuring sign area and sign height
14-17.4.3	**Sign Illumination**	Establishes standards for sign illumination including EMCs
14-17.4.4	**Structure and Installation**	Establishes standards for sign structures and sign installation with cross-reference to the City's building codes
14-17.4.5	**Sign Maintenance**	Establishes standards for sign maintenance
14-17.5	**Standards for Permanent Signs**	
14-17.5.1	**Applicability**	Explains how the permanent sign standards apply to all sign types across all zoning districts
14-17.5.2	**Standards for Permanent Signs by Zoning District or Use**	In a table format establishes the maximum sign area and height limitations for each zoning district or use type
14-17.5.3	**Standards for all Permanent Sign Types**	Establishes specific standards for each sign type in two broad categories – building mounted signs and free-standing signs
14-17.6	**Sign Design Guidelines and Performance Standards**	
14-17.6.1	**Sign Design Guidelines**	May include existing and expanded sign design guidelines, unless these are included as mandatory standards
14-17.6.2	**Sign Design Elements**	Establishes standards for enhanced sign design
14-17.6.3	**Cumulative Adjustments**	Establishes the process for applying multiple design standards to building mounted or freestanding signs
14-17.7	**Standards for Portable Signs and Temporary Signs**	
14-17.7.1	**Purpose**	Explains why the regulation of portable/temporary signs is necessary
14-17.7.2	**General to All**	Establishes standards applicable to all portable/temporary signs
14-17.7.3	**Standards for Portable Signs**	Establishes standards applicable to each portable/temporary sign type
14-17.8	**Sign Districts of Special Designation**	
14-17.8.1	**Historic Districts**	Establishes standards for Historic Districts
14-17.8.2	**TBD**	
14-17.9	**Nonconforming Signs**	
		Establishes standards and procedures for non-conforming signs (confirm with City staff if this Chapter stays in the Sign Code)
14-17.10	**Enforcement**	
		Establishes procedures for the enforcement of the Sign Code

14-17.11	Definitions	
		Definitions and abbreviations used in the sign code to be moved into the new Land Use Code at the appropriate time

H. Conclusion and Next Steps

This Sign Code Audit and Recommendations Report has been prepared to fulfill Task 1.4 (Sign Code Diagnosis and Recommendations Report) of the project to update the City of Portland's existing sign regulations included in Division 22 (Signs) of the Portland City Code.

Based on an overview of the legal principles that local municipalities must follow to adopt a legally-defensible and constitutionally sound sign code, a comprehensive analysis or diagnosis of the City's existing Sign Code was presented which identified where amendments are required, where new regulations are recommended, and what provisions in the current Sign Code may be carried forward, updated and expanded as needed. The report concludes with a new annotated outline of a recommended Table of Contents, which may evolve as the Administrative Draft of the Sign Code is written.

Now that the Sign Code Audit and Recommendations Report has been completed, LWC will now commence work on an Administrative Draft of the sign code to be submitted for internal review by City staff only before a Public Review Draft of the final Sign Code is submitted towards the end of the year for a public presentation with the Planning Board.

Comprehensive Sign Code Update

City of Portland

Community Workshop | July 9, 2018









LWC

RESURGAM
CITY OF PORTLAND, MAINE

Introduction

Christine Grimando, AICP
Senior Planner

Roger E. Eastman, AICP
Director, Development Codes and Planning

Agenda

1. Introduction and Background
2. Legal Context and Key Issues
3. Discussion
4. Next Steps



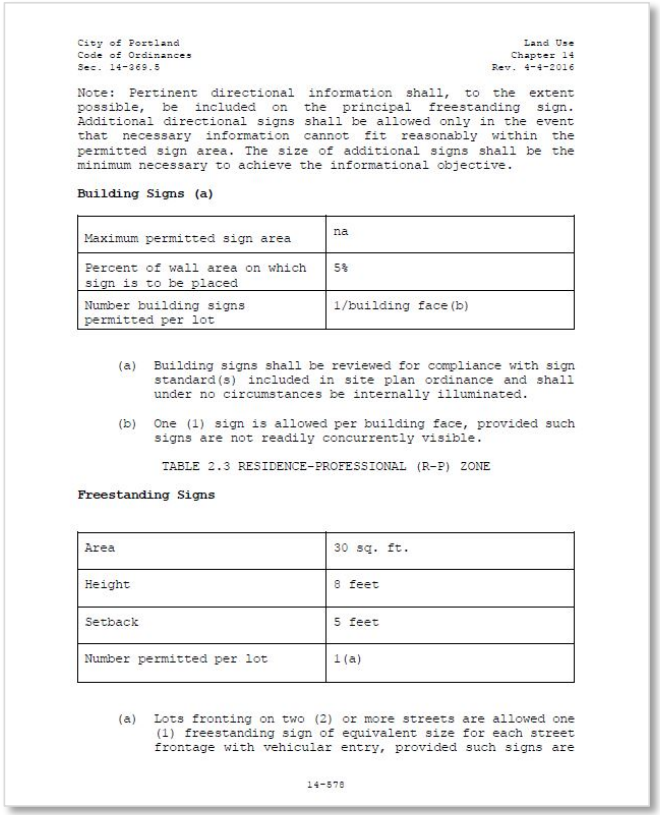
Introduction and Background

Purpose of the Workshop

- Inform residents about the project
- Explain the new legal landscape following *Reed v. Town of Gilbert*
- Present what we heard from today's stakeholder interviews
- Hear from you – what is working, what is not, and your ideas?

Project Overview

- Staff are updating the City's zoning ordinance
- Identified the need for an update to the City's sign code
- Lisa Wise Consulting, Inc. hired to assist



City of Portland
Code of Ordinances
Sec. 14-369.5

Land Use
Chapter 14
Rev. 4-4-2016

Note: Pertinent directional information shall, to the extent possible, be included on the principal freestanding sign. Additional directional signs shall be allowed only in the event that necessary information cannot fit reasonably within the permitted sign area. The size of additional signs shall be the minimum necessary to achieve the informational objective.

Building Signs (a)

Maximum permitted sign area	na
Percent of wall area on which sign is to be placed	5%
Number building signs permitted per lot	1/building face(b)

(a) Building signs shall be reviewed for compliance with sign standard(s) included in site plan ordinance and shall under no circumstances be internally illuminated.

(b) One (1) sign is allowed per building face, provided such signs are not readily concurrently visible.

TABLE 2.3 RESIDENCE-PROFESSIONAL (R-P) ZONE

Freestanding Signs

Area	30 sq. ft.
Height	8 feet
Setback	5 feet
Number permitted per lot	1(a)

(a) Lots fronting on two (2) or more streets are allowed one (1) freestanding sign of equivalent size for each street frontage with vehicular entry, provided such signs are

14-578

Page from Division 22 (Signs) of the Zoning Ordinance

Project Overview

- Staff are updating the City's zoning ordinance
- Identified the need for an update to the City's sign code
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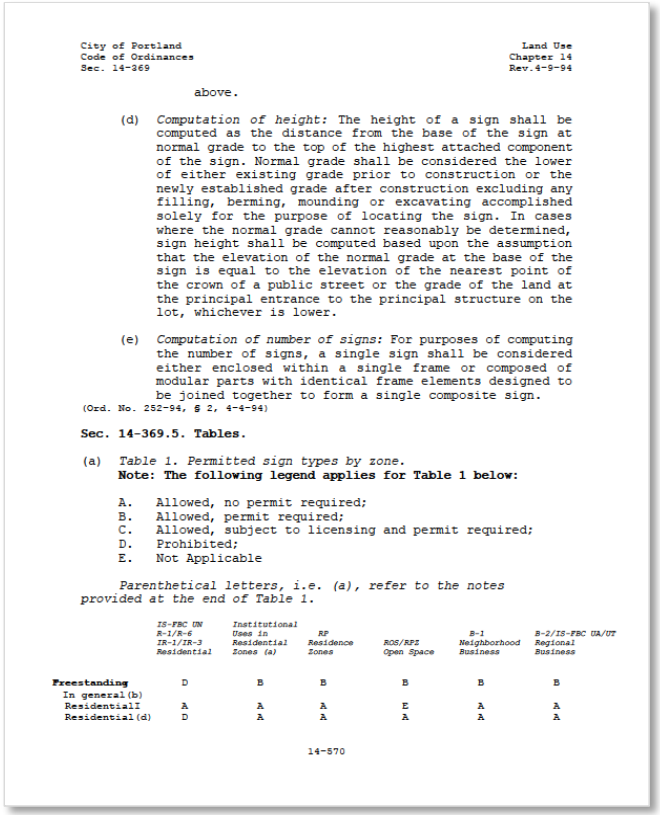


City of Portland
Code of Ordinances
Sec. 14-369

Land Use
Chapter 14
Rev. 4-5-94

above.

(d) *Computation of height:* The height of a sign shall be computed as the distance from the base of the sign at normal grade to the top of the highest attached component of the sign. Normal grade shall be considered the lower of either existing grade prior to construction or the newly established grade after construction excluding any filling, berming, mounding or excavating accomplished solely for the purpose of locating the sign. In cases where the normal grade cannot reasonably be determined, sign height shall be computed based upon the assumption that the elevation of the normal grade at the base of the sign is equal to the elevation of the nearest point of the crown of a public street or the grade of the land at the principal entrance to the principal structure on the lot, whichever is lower.

(e) *Computation of number of signs:* For purposes of computing the number of signs, a single sign shall be considered either enclosed within a single frame or composed of modular parts with identical frame elements designed to be joined together to form a single composite sign.

(Ord. No. 252-94, § 2, 4-4-94)

Sec. 14-369.5. Tables.

(a) *Table 1. Permitted sign types by zone.*
Note: The following legend applies for Table 1 below:

A. Allowed, no permit required;
B. Allowed, permit required;
C. Allowed, subject to licensing and permit required;
D. Prohibited;
E. Not Applicable

Parenthetical letters, i.e. (a), refer to the notes provided at the end of Table 1.

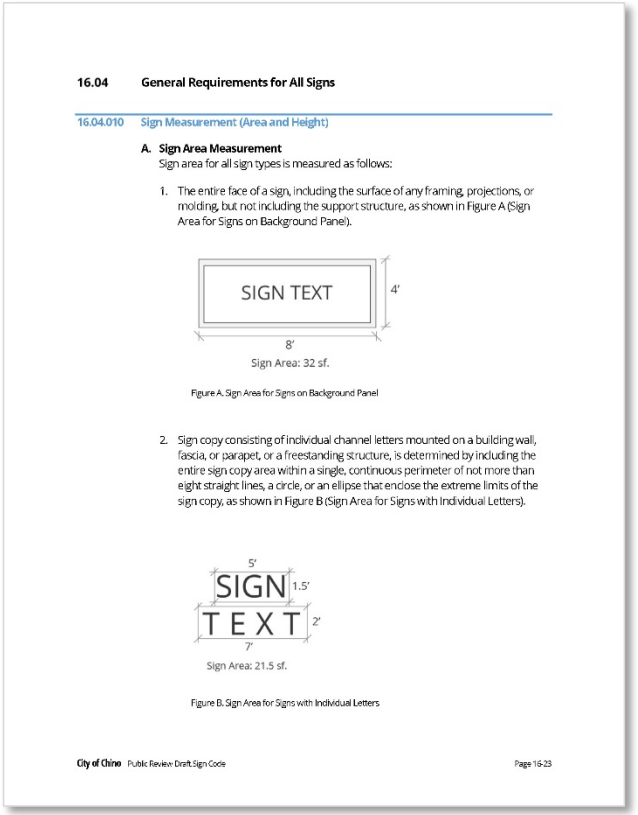
	IS-FBC UN R-1/R-6 IR-1/IR-3 Residential	*Institutional Uses in Residential Zones (a)*	*RP Residence Zones*	*ROS/RPZ Open Space*	*B-1 Neighborhood Business*	*B-2/IS-FBC UA/UT Regional Business*
Freestanding	D	B	B	B	B	B
In general(b)						
Residential[]	A	A	A	E	A	A
Residential(d)	D	A	A	A	A	A

14-570

Page from Division 22 (Signs) of the Zoning Ordinance

Purpose of the Update

- Ensure consistency with state and federal law and *Portland Plan 2030*
- Responsive to Portland's needs
- Clear and effective standards
- Well-organized
- Richly illustrated
- Straight forward – easy to administer



16.04 General Requirements for All Signs

16.04.010 Sign Measurement (Area and Height)

A. Sign Area Measurement

Sign area for all sign types is measured as follows:

1. The entire face of a sign, including the surface of any framing, projections, or molding, but not including the support structure, as shown in Figure A (Sign Area for Signs on Background Panel).

Sign Area: 32 sf.

Figure A. Sign Area for Signs on Background Panel

2. Sign copy consisting of individual channel letters mounted on a building wall, fascia, or parapet, or a freestanding structure, is determined by including the entire sign copy area within a single, continuous perimeter of not more than eight straight lines, a circle, or an ellipse that enclose the extreme limits of the sign copy, as shown in Figure B (Sign Area for Signs with Individual Letters).

Sign Area: 21.5 sf.

Figure B. Sign Area for Signs with Individual Letters

Example of a well illustrated sign code

Purpose of the Update

- Ensure consistency with state and federal law and *Portland Plan 2030*
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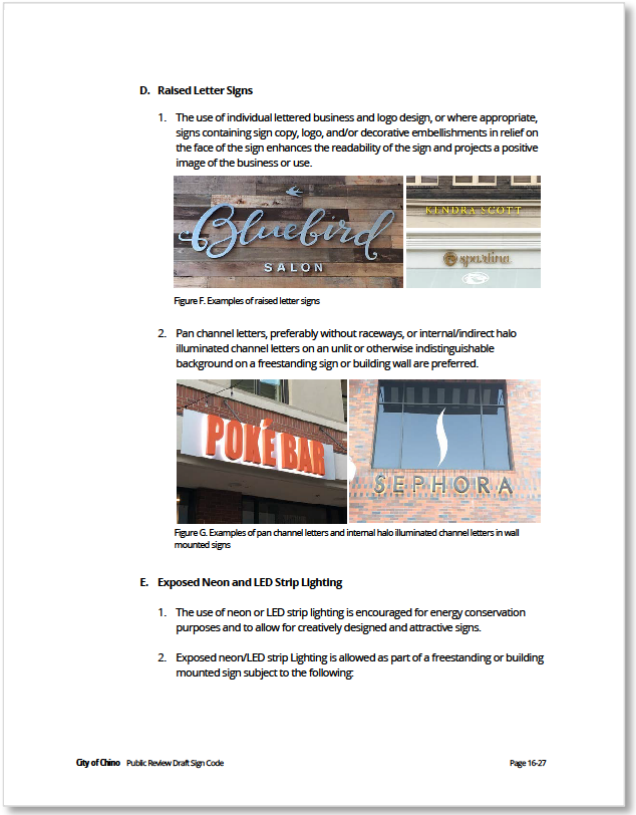


D. Raised Letter Signs

1. The use of individual lettered business and logo design, or where appropriate, signs containing sign copy, logo, and/or decorative embellishments in relief on the face of the sign enhances the readability of the sign and projects a positive image of the business or use.

Figure F. Examples of raised letter signs

2. Pan channel letters, preferably without raceways, or internal/indirect halo illuminated channel letters on an unlit or otherwise indistinguishable background on a freestanding sign or building wall are preferred.

Figure G. Examples of pan channel letters and internal halo illuminated channel letters in wall mounted signs

E. Exposed Neon and LED Strip Lighting

1. The use of neon or LED strip lighting is encouraged for energy conservation purposes and to allow for creatively designed and attractive signs.
2. Exposed neon/LED strip Lighting is allowed as part of a freestanding or building mounted sign subject to the following:

Example of a well illustrated sign code

Purpose of the Update

- Organizational issues
- Legal issues
- Standards – aesthetic and context issues

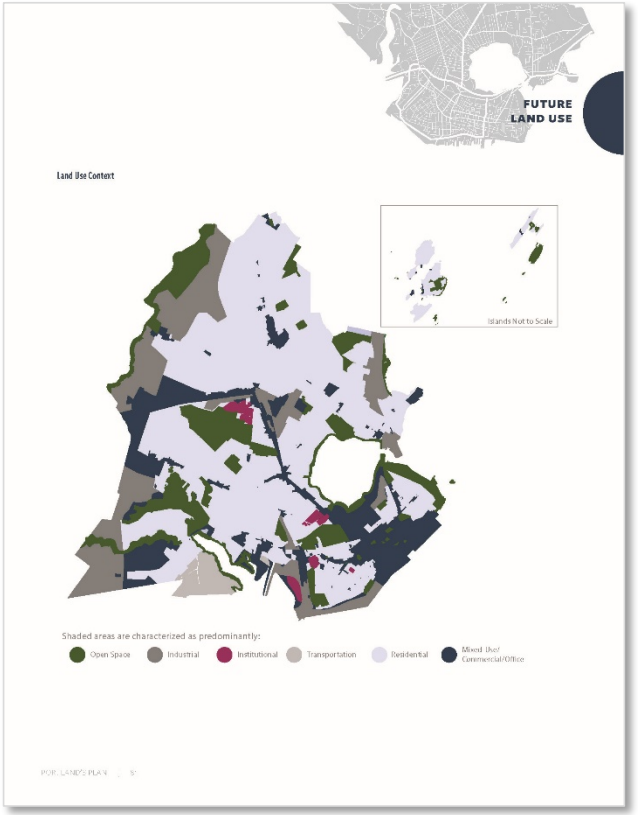




Portland's Plan 2030

Overarching policy guidance

- Promote historic preservation
- Leverage arts and culture
- Incorporate creative design, public art, and placemaking
- Employ consistent signage
- Invest in a walkable city through strong urban design and wayfinding



Future Land Use Map from Portland's Plan 2030



Legal Context and Key Issues

Reed v. Town of Gilbert

- *Reed v. Town of Gilbert*, US Supreme Court No. 135 S.CT. 2218, 2015



Source: http://www.nytimes.com/2015/06/19/us/justices-side-with-arizona-church-in-dispute-over-sign-limits.html

"Temporary Directional Signs Relating to a Qualifying Event"

Reed v. Town of Gilbert

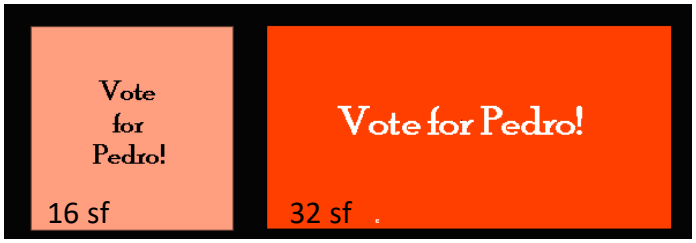
- *Reed v. Town of Gilbert*, US Supreme Court No. 135 S.CT. 2218, 2015

Ideological



Where?	How long?
Anywhere	As long as you want

Political



Where?	How long?
Residential (16 sf) NR / public / ROW (32)	60 before primary 15 after general

Temporary Directional Sign Relating to a Qualifying Event



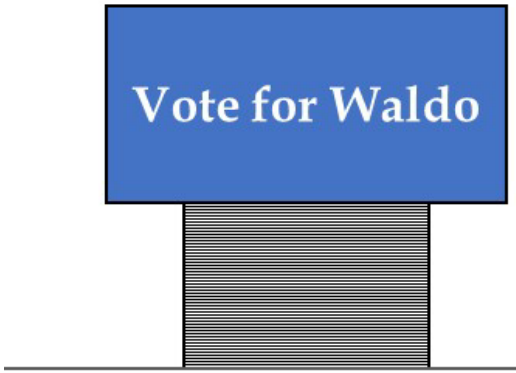
6 sf

Where?	How long?
Private or public land 4 at a time	12 hours before 1 hour after

Legal Considerations

Content-Based Regulation

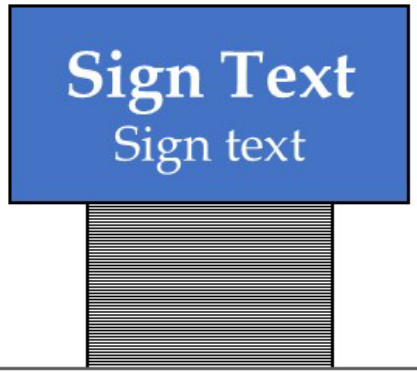
- What does sign say?
- Message determines if it stays up or down, or applicable regulations



"Political Sign"

Content-Neutral Regulation

- Time
- Place
- Manner



"Freestanding Sign"

Speech v. Local Environment

Freedom of speech is an existential right - election cycles exist – a community's visual environment defines its special character









Legal Considerations

Sign Types Anticipated to be Revised – Consistent with *Reed v. Gilbert*	
Existing Sign Type	**Proposed Sign Type**
Temporary Signs	
Real estate/construction/for sale or lease signs	Temporary yard, banner
Political	Temporary yard, banner, portable
Ballfield booster or sponsor signs	Temporary banner
Seasonal sales/special activities signs	Temporary yard, banner, portable
Permanent Signs	
Single-family subdivisions & multifamily developments--development identification signs	Freestanding or wall
Gas station signs	Freestanding or wall
Concession/facility sign	Freestanding or wall
Institutional	Freestanding or wall

Key Issues Identified

- Some sign types are content-based
  - Gas station signs, political signs, seasonal sales/special activities signs, real estate/construction/for sale or lease signs
- Organizational issues
  - Sign code itself is poorly organized
  - Many external references to sign guidelines and standards
- Lack of illustrations
- Hard to read tables
- Inconsistent
- Hard to apply and implement
- Lacks severability and substitution clauses


HARBOR FISH MARKET
"WHILE THEY LAST" WWW.HARBORFISH.COM
WILD ATLANTIC, FRESH FILLET
HADDOCK $5.99 lb.
WILD ATLANTIC, FRESH NATIVE
STEAMERS 5 POUNDS OR MORE $3.69 lb. $3.99 lb
FRESH LIVE 1½# AVG
LOBSTERS $3.99 lb.
FRESH STEAKS WILD ATLANTIC
SWORDFISH $12.99 lb
WILD ATLANTIC, FRESH WHOLE
CALAMARI 5 POUNDS OR MORE
$3.99 lb
OPEN SUNDAYS
NOW! OPEN!
SUNDAYS
9:00 TO 3:00

Discussion

Some well designed signs







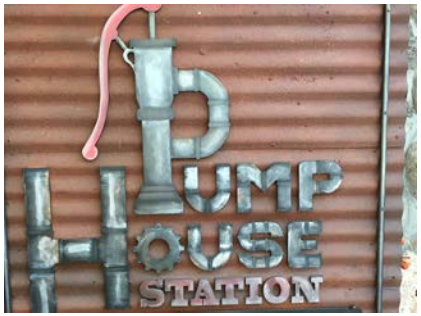






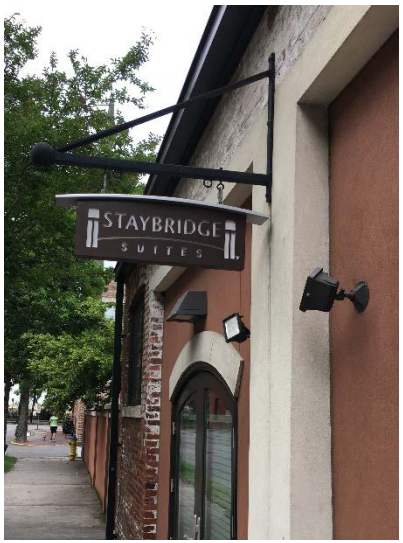






Some well designed signs

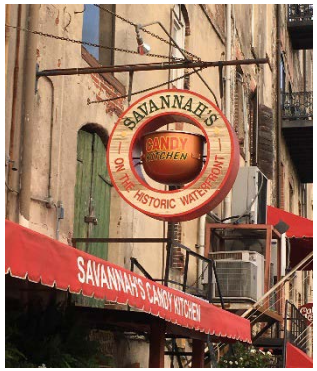










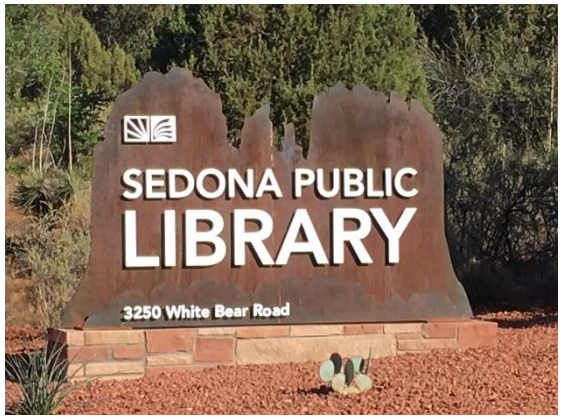








Some well designed signs













Today's Stakeholder Interviews

- Organizational issues
- Generally standards are working
- Clearly some need to be updated
- Keep the character of Portland
- Streamline permitting
- Flexibility is key
- Certainty is also important
- Context-based signage standards
- Strong consistent enforcement
- You know what you don't want!





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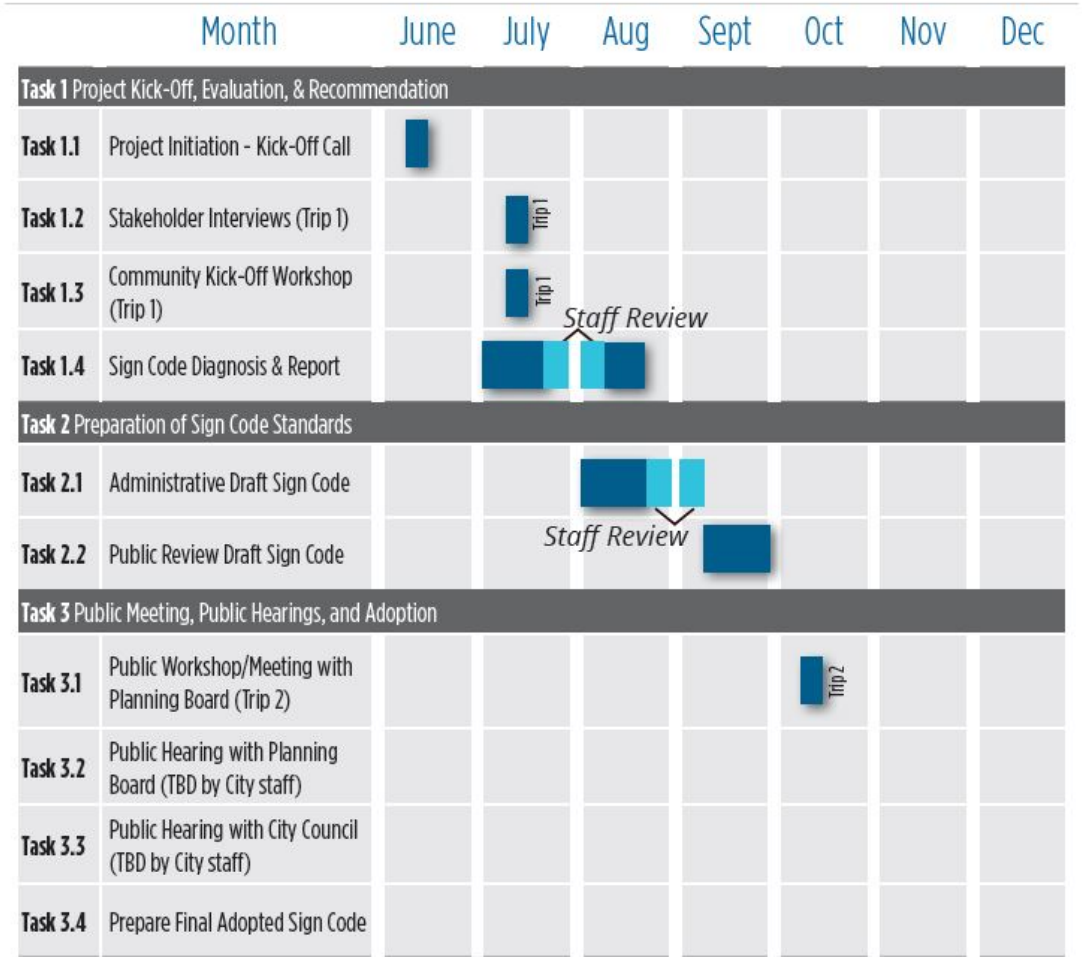
Next Steps

Next Steps


Month
June
July
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Dec
Task 1 Project Kick-Off, Evaluation, & Recommendation
Task 1.1 Project Initiation - Kick-Off Call
Task 1.2 Stakeholder Interviews (Trip 1)
Trip 1
Task 1.3 Community Kick-Off Workshop (Trip 1)
Trip 1
Staff Review
Task 1.4 Sign Code Diagnosis & Report
Task 2 Preparation of Sign Code Standards
Task 2.1 Administrative Draft Sign Code
Staff Review
Task 2.2 Public Review Draft Sign Code
Task 3 Public Meeting, Public Hearings, and Adoption
Task 3.1 Public Workshop/Meeting with Planning Board (Trip 2)
Trip 2
Task 3.2 Public Hearing with Planning Board (TBD by City staff)
Task 3.3 Public Hearing with City Council (TBD by City staff)
Task 3.4 Prepare Final Adopted Sign Code

Thank you

Christine Grimando, AICP
Senior Planner
City of Portland

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cdg@portlandmaine.gov

PLANNING BOARD REPORT
PORTLAND, MAINE

MMC Congress Street Hospital Building
22 Bramhall Street
Level III Site Plan
Project #000331-2018
53-D-7
Maine Medical Center, Applicant

Submitted to: Portland Planning Board Public Hearing Date: December 17, 2018	Prepared by: Nell Donaldson, Senior Planner Date: December 14, 2018

I. INTRODUCTION

Maine Medical Center (MMC) appears before the Planning Board for a final hearing on the third phase of the short-term expansion proposed in their 2017 Institutional Development Plan. This phase involves the demolition of the existing 360,000 SF Gilman Street employee parking garage and replacement with a 285,000 hospital building. As proposed, the hospital building would house 64 private patient rooms, 19 procedure rooms, and connections to both the Congress Street corridor and the interior of the Bramhall campus. The proposal is subject to the standards of the Maine Medical Center Institutional Overlay Zone (MMC IOZ) and qualifies for Level III site plan review under the city's land use code. The application also qualifies as an amendment to an existing Site Law permit under the state's Site Location of Development Act, for which the city has delegated review authority. Advertisement of this workshop appeared in the *Portland Press Herald* on December 6 and 7, 2018. In addition, 254 notices were sent to property owners within 500 feet and the interested citizens list.

The Planning Board met on October 23 and November 13, 2018 to review the preliminary plans for MMC's proposed Congress Street hospital building, focusing on urban design, transportation, and stormwater aspects of the review. This hearing provides an opportunity to review final plans submitted in response to earlier staff comments.

Applicant: Maine Medical Center
Consultants: Will Conway, Sebago Technics; Jeff Keilman, Perkins & Will; Randy Dunton, Gorrill-Palmer; Turner Construction

II. REQUIRED REVIEWS

Waiver Requests	*Applicable Standards*
Driveway width – to allow a driveway approximately 35' in width	*Technical Manual Section 1.7.2.4* – Maximum widths shall not exceed 24' for two-way access. *Supported by staff.*
Sidewalk material – to allow concrete sidewalks with granite banding on Congress and Gilman Streets	*Technical Manual Section 1.8* – The City sidewalk materials policy shall be consulted to determine the appropriate type of sidewalk construction. *Supported by staff.*
Stormwater treatment system design criteria – to allow a surface area for the subsurface system of 3,134 SF	*Technical Manual Section 5.II.D* – Redevelopment projects shall provide stormwater treatment in accordance with the General Standards of Chapter 500. (Minimum surface area of 3,883 SF to treat the proposed project and Visitor Garage.) *Supported by consulting civil engineer.*
Exterior lighting – to allow maximum and average illumination levels of 5.4 fc and 1.34 fc respectively	*Technical Manual Section 12.2.3* - Maximum illumination levels shall be 5.0 fc and average illumination levels shall be no more than 1.25 fc. *Supported by staff.*

Review	*Applicable Statute*
Institutional Overlay Zone	*Section 14-282*
Site Plan	*Section 14-526*
Site Location of Development	*Technical Manual Section 14*

III. PROJECT DATA

Existing Zoning	Institutional Overlay Zone
Existing Use	Structured parking
Proposed Use	Hospital building – 19 procedure rooms, 64 inpatient rooms
Parcel Size	12.5 acres (contiguous Bramhall campus)

	Existing	*Proposed*	*Net Change*
Building Footprint	36,000 SF	50,000 SF	14,000 SF
Building Floor Area	360,000 SF	285,000 SF	-75,000 SF
Impervious Surface Area	398,575SF	412,862SF	14,287SF
Parking Spaces	3,279 (for entire campus, including employee garage)	3,279	0
Bicycle Parking Spaces	193 (campus-wide)	193	0

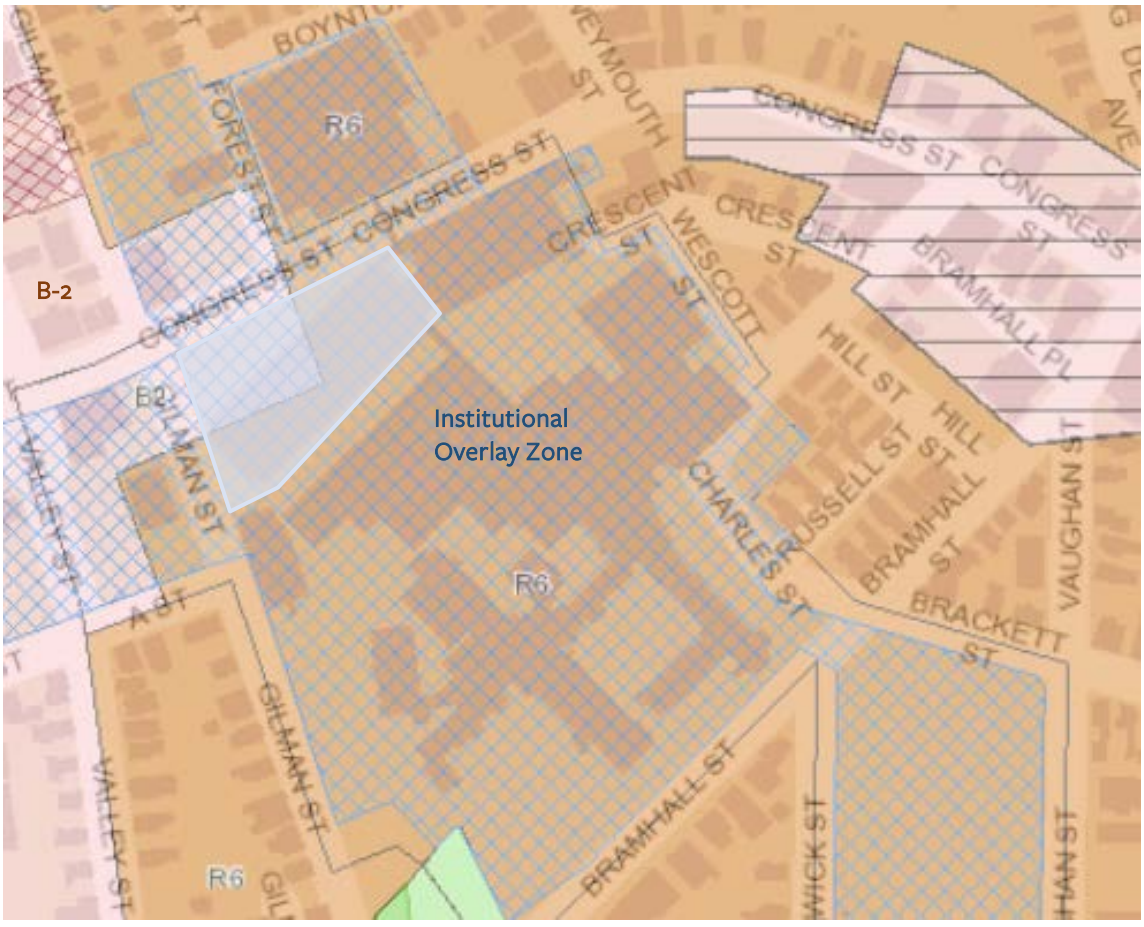
IV. CONTEXT

Maine Medical Center's Institutional Development Plan (IDP), approved by the Planning Board in the fall of 2017, laid the groundwork for a major hospital expansion over the next decade. The short- and long-term expansion plans proposed in the IDP were designed to respond to an emergent clinical need for private beds, to retire aging facilities which no longer meet the needs of patients and visitors, to reorganize the campus to address evolving best practice in health care design, and to centralize parking for employees and visitors. As of the fall of 2018, the hospital has received site plan approval for two of the three projects that comprise the hospital's short-term development plan – the vertical expansions of the East Tower and Visitor Garage and the construction of the Employee Garage at 190 St. John Street. The third project, a new 285,000 SF hospital building with a major entrance on Congress Street, is under consideration here.

The site of the proposed Congress Street hospital building lies on the northwest corner of MMC's Bramhall campus, at the intersection of Congress and Gilman Streets *(Figure 1)*. The bulk of the Bramhall campus sits up gradient behind the site. The Maine Sleep Institute lies to the west across Gilman Street, commercial properties face the site from the north across Congress Street, and MMC's Visitor Garage lies to the east. The site is currently occupied by MMC's Gilman Garage.

The site lies within the MMC Institutional Overlay Zone (IOZ), a zoning designation adopted into the land use code by the City Council in November of 2017 *(Figure 2)*. The IOZ establishes use and dimensional standards which govern proposed development by MMC within the zone, as well as a series of general development standards. Development within the IOZ which meets the criteria for site plan review is also subject to the site plan standards of the land use code.





Figures 1 & 2: Project site land use context (above) and zoning context (below)

V. PROPOSED DEVELOPMENT

The site plan application includes the demolition of the existing 360,000 SF Gilman Garage, which has stood on the site since the mid-1970s and is nearing the end of its useful life. Following demolition, significant site work is proposed, including substantial regrading, utility work, and the installation of an underground stormwater detention and treatment facility.

The new 285,000 SF building which is proposed to replace the Gilman Garage would contain circulation space and pre-operative/recovery rooms on the first floor, a second floor containing 19 procedure rooms, and inpatient rooms on the third and fourth floors. A landscaped roof garden is proposed with access from the 3rd floor. Connections to the upper campus would be provided through a vertical tower at the southeast corner of the building, with access from the fifth, sixth, and seventh floors of this tower.

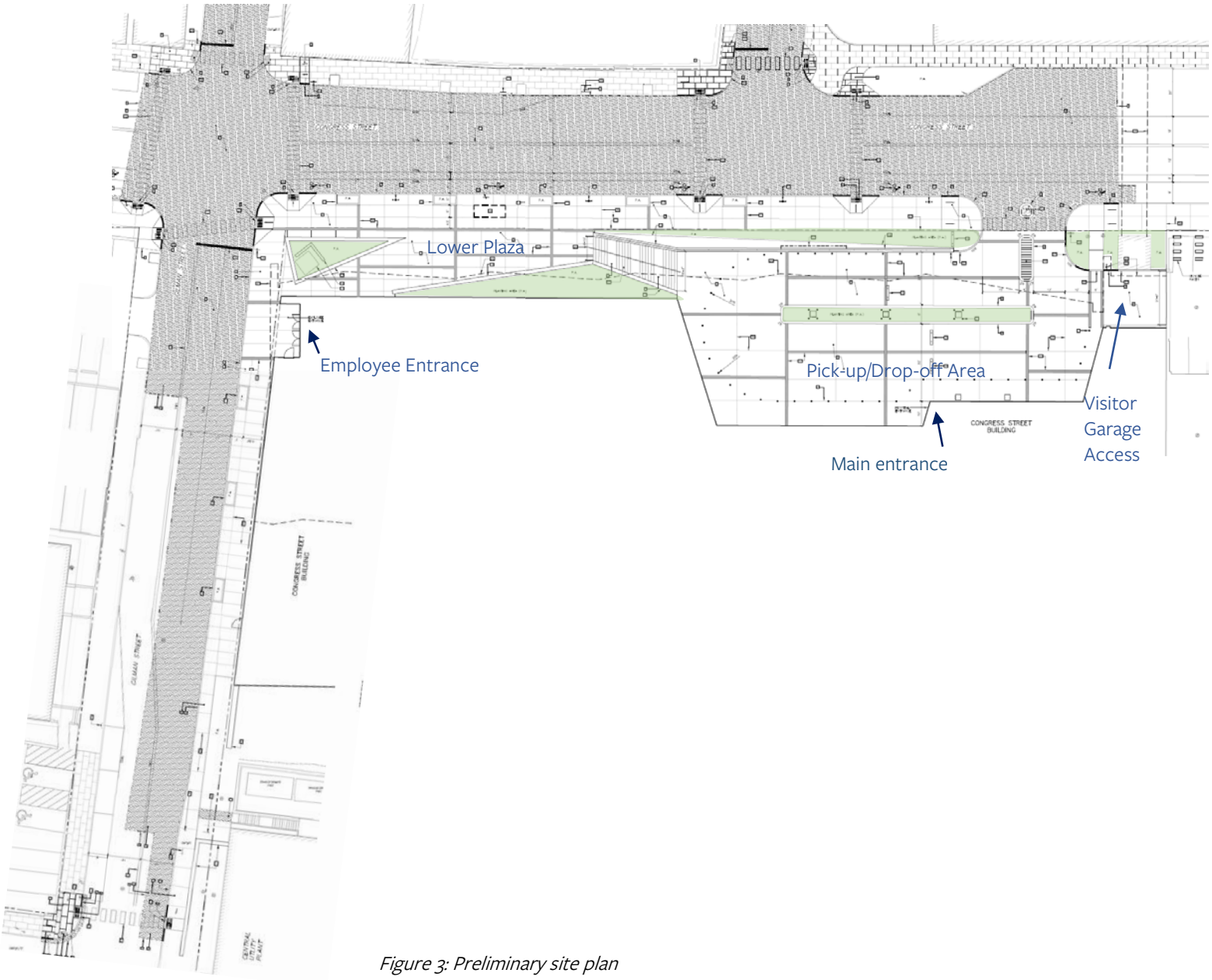
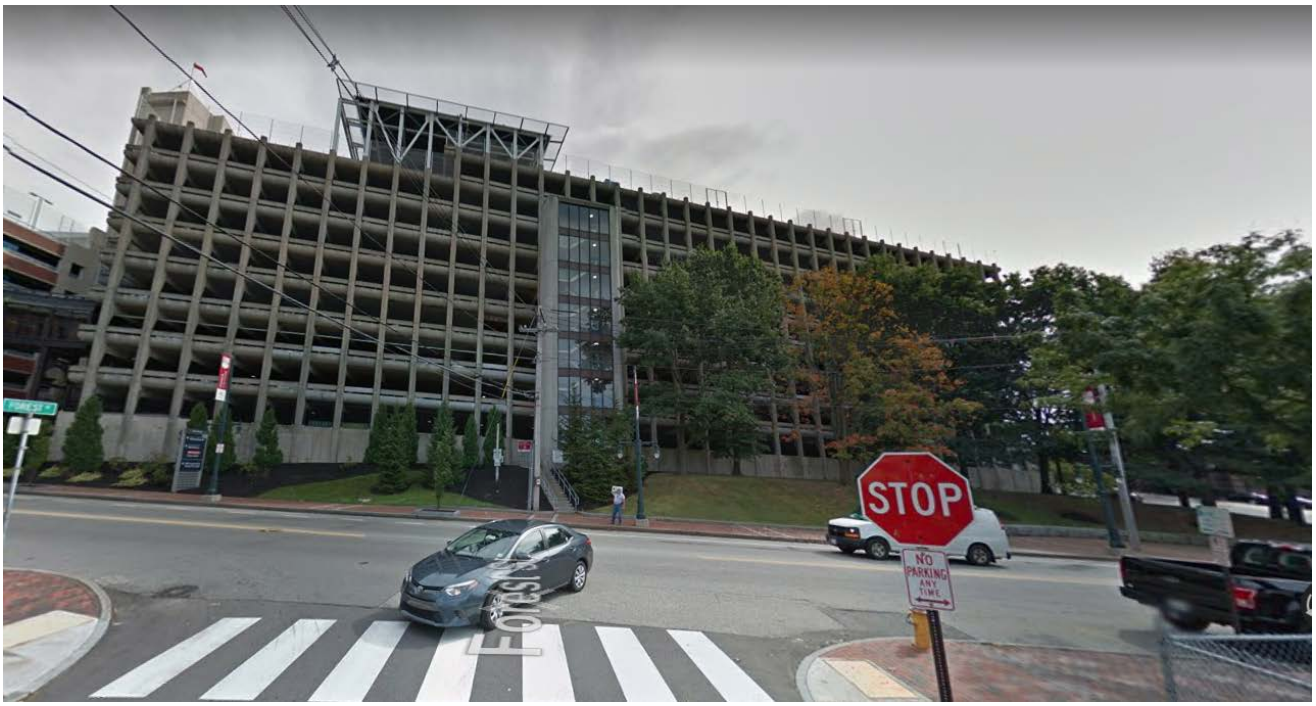


Figure 3: Preliminary site plan





Figures 4 and 5: View from Forest Street looking south across Congress Street, existing (above) and proposed (below)

The building has been designed to function as a major point of entry to the hospital, giving the campus a new face on Congress Street and a new way of engaging with the neighborhoods that surround it. The building's most active areas, including circulation and lobby spaces, are oriented towards Congress Street, where significant amounts of glass are proposed. The building would lie between 20 and 30 feet from the right-of-way line on Congress Street and directly adjacent to the right-of-way line on Gilman Street.

The site plan includes an arrival area tucked partly below the second floor at the easterly end of the building. This turnaround would provide access for vehicles, pedestrians, and bicyclists destined for the main building entrance as well as vehicles entering the visitor garage. The turnaround is proposed in hardscape, with shade-tolerant plantings in the center. This area would be held by a significant retaining wall at the Congress Street property line, one-story above a separate plaza space with plantings and low seating walls at the northwesterly corner of the site. A broad stairway is proposed to join these two exterior spaces.

VI. PUBLIC COMMENT

Two written public comments were received by the Planning Division (*Attachments PC-1 and PC-2*). These comments raised questions regarding the number of trees and tree species, plant species in general, snow ban parking arrangements, the scope of the traffic study area, traffic safety in the study area, and the Traffic Movement Permit process.

At the October 23 workshop, there was one public comment from the author of one of the written comments, which focused on the loss of existing trees and plant selection. This member of the public requested native species be used where possible, and suggested more trees in the planting areas, as well as irrigation.

At the November 13 workshop, the Planning Board considered the second public comment within the public comment period. Again, this comment raised questions regarding the Traffic Movement Permit scope, analysis, and process.

The applicant hosted a neighborhood meeting on Wednesday, October 17 *(Attachment MM)*. This meeting included discussion about the St. John employee garage as well as the Congress Street medical building. There were six attendees. Discussion covered design, construction impacts, and anticipated traffic impacts. Questions and comments included concerns about blank facades, explanation of future expansion phases, property surveys, loss of existing trees, and new tree selection.

VII. RIGHT, TITLE, & INTEREST

The MMC IOZ is only applicable to properties to which MMC has right, title, or interest. The applicant has provided evidence of right, title, and interest in the property for which the project is proposed. *(Attachment C)*.

The final plans show an encroachment into the right-of-way at the northwest corner of the building, where the third floor is proposed to overhang the property line (Plan 53). Building footings are also proposed within the right-of-way. A condition of approval has been drafted to address these encroachments. The final plans also show several areas of sidewalk on private property. As is customary in cases like these, public access easements will be required. This has also been included as a condition of approval.

VIII. FINANCIAL & TECHNICAL CAPACITY

The applicant has provided a description of the project team and a letter regarding their financial capacity *(Attachments H and I)*.

IX. ZONING ANALYSIS – INSTITUTIONAL OVERLAY ZONE REGULATORY FRAMEWORK

As noted above, the site lies within the Maine Medical Center Institutional Overlay Zone, which establishes use, dimensional, and development standards for MMC projects within its bounds. The project has been reviewed for conformance with these standards. Staff comments are below.

a. *Use*
The proposed use of the building, as a hospital, is permitted within the IOZ.

b. *Dimensional Requirements*
The applicant has submitted a zoning assessment which documents that the project meets dimensional requirements related to building height, build-to lines, and setbacks *(Attachment E)*.

c. *Design*
New buildings within the IOZ are required to adhere to the design guidelines of the IDP. These design guidelines were written to promote campus cohesion, neighborhood compatibility, pedestrian-scaled edges, the use of high quality materials, the integration of gateway features, and quality of long-views. In their final submittal, the applicant has provided elevations *(Plans 32, 33, and 34)*, renderings *(Plans 36-43)*, and a design narrative addressing these guidelines *(Attachment JJ)*.

Caitlin Cameron, the city's Urban Designer, has documented the results of the city's review of the final plans *(Attachment 1).* This review generally finds that the building design meets the design standards of the IDP. Additional discussion on the building interface with the public realm is provided under the site plan review below.

d. *Signs*
Signs within the IOZ are required to conform to a unified, campus-wide signage plan and relate in proportion and character to building facades and adjacent street typology. In their final submittal, MMC has provided a master sign plan *(Attachment II).* Generally, the sign plan proposes to replace the existing sign program with new signs in the existing locations. Staff previously commented on consistency of design throughout the Maine Medical Center campus, scale of signs in relation to the pedestrian realm, traffic sight lines and safety at driveway locations, material selection, limiting the number of signs, and placement.

The final design review by Ms. Cameron includes a discussion of the master sign plan *(Attachment 1)*. In the final master sign plan submittal, the height and number of signs were reduced where possible in response to staff comment. The material was also revised to eliminate the stone veneer component; instead the signs use metal with consistent materials, text, lighting, and colors. Some discrepancies remain within the master sign plan, showing signs that have been removed from the project or showing different types of signs for the same location. In addition, staff do not support the large graphic introduced on the back side of the signs and find this to be inappropriate in these historic streetscapes.

Staff suggest a condition of approval that the master sign plan be updated to address five outstanding comments:

Correct any errors regarding sign placement or type

Remove the "Susie's Story" graphic and text components from the back of signs

Clarify shape and type of sign at the corner of Congress Street and Gilman Street

Remove street signs as shown on pages 30 and 31. Revisions to the blue H signage will be coordinated between staff and the applicant separate from this campus sign plan.

Provide documentation showing that signs proposed on Bramhall Street and Wescott Street are to be placed on MMC-owned property.

e. Transportation

The IOZ requires the submission of a Transportation Demand Management plan. The review of this TDM plan is discussed under site plan review below.

Per the IOZ, parking requirements are to be established at the time of site plan review based on a parking study that examines campus-wide supply and demand. In their final submittal, MMC speaks to existing and projected parking demand and supply in both their traffic and parking analysis *(Attachment J)* and in their TDM plan *(Attachment R)*. The previously-reviewed Employee Garage project, as well as the Visitor Garage expansion, have been designed to accommodate parking demand generated by the Congress Street hospital building.

f. Environment

The IOZ requires that development proposed by MMC be designed to integrate with the surrounding context. Review comments related to this standard can be found under site plan review below.

g. Mitigation Measures

The IOZ requires that MMC mitigate impacts to off-premise infrastructure in a manner proportionate to those impacts. Review comments related to this standard can be found under site plan review below.

h. Neighborhood Integration & Neighborhood Engagement

The IOZ also requires that MMC engage neighbors consistently through ongoing community engagement and through periodic and more intensive engagement during construction periods. MMC continues to hold regular meetings of the Expansion Group established to communicate with surrounding neighborhoods during construction and use their website, www.mmc.org/modernization, to communicate with the public more broadly. In addition, MMC and the surrounding neighborhoods are currently working on the formation of a standing Neighborhood Advisory Committee, as required under the IOZ. A draft of the charter for this committee is attached *(Attachment RR).*

i. Construction Management

A construction management plan is required under the provisions of the IOZ. The applicant has provided a revised construction management plan in the final submittal *(Attachment KK)*. Construction is proposed on a three-year timeline, with occupation estimated for fall of 2022. Demolition is proposed over a six-month period, progressing from west to east. Demolition debris would be processed in place and hauled from the site via truck. Construction will be accomplished using a tower crane; the pad is proposed to lie entirely on MMC property.

A dust control and monitoring plan is proposed, as is a noise mitigation plan and process for addressing noise concerns. The plan includes air quality monitoring and vibration monitoring provisions. The vibration monitoring provisions include site surveys on Gilman Street, A Street, and Congress Street, pre-construction baseline monitoring, and continuous monitoring during excavation. Given general concerns regarding vibration monitoring during construction, staff is requesting additional clarity around the site survey element of this approach. In accordance with the IOZ, the construction management plan also contains a communication component, including a plan for public noticing and processing construction concerns.

With respect to traffic movement during construction, the applicant has proposed to install a construction fence 12' off the existing Congress Street curbline and 10' from the Gilman curbline. Two-way traffic would be maintained on both streets. The south-side sidewalk along Congress Street would be closed, with pedestrian detours proposed for eastbound pedestrians at the Gilman/Congress intersection and for westbound pedestrians at the mouth of the MMC Visitor Garage. The sidewalk on the east-side of Gilman Street would also be closed. Trucks would enter the site through gates at the Congress/Gilman intersection, the existing garage entrance on Gilman Street, and the Forest Street/Congress Street intersection.

In the final submittal, the applicant has responded to previous staff comments regarding the provision of temporary pedestrian and bicycle infrastructure adjacent to the site on Congress Street during construction. A temporary sidewalk is not recommended by the applicant. They have committed to providing share-the-road signs on Congress Street and Gilman Street as a means of accommodating bicycle traffic. Thomas Errico, the city's consulting traffic engineer, has reviewed the final construction management plan and writes,

It is recommended that further discussion on the duration of the Congress Street sidewalk closures be included.

Supplemental pedestrian safety devices will be required during the sidewalk closure time period (to safely cross pedestrians for the sidewalk detour).

All sidewalk detours shall be ADA compliant.

Changes to the lane configuration on Congress Street west of Gilman Street is likely and may need to be included in the plan.

A significant amount of construction activity will be required for utility and street construction work and specific plans shall be development for review and approval.

A condition of approval has been suggested to address outstanding comments on the construction management plan.

X. SITE PLAN SUBMISSION REQUIREMENTS (Section 14-527)

The application has been reviewed against the submittal requirements of the site plan ordinance. In the final site plan submittal, MMC has identified several required federal and state permits. These include FAA permits for both the crane and the building, and amended Site Location of Development (SLOD) and Traffic Movement Permits (TMP), which are issued by the city under its delegated review authority from the state. SLOD and TMP reviews are discussed below. The FAA permits are outstanding. A condition of approval has been suggested to address this requirement.

In addition, the final site plans are not stamped by a professional engineer. An engineer's stamp is also suggested as a condition of approval.

XI. SITE PLAN REVIEW *(Section 14-526)*

The proposed development has been reviewed for conformance with the relevant review standards of the City of Portland's site plan ordinance. Staff comments are below.

1. Transportation Standards

a. Impact on Surrounding Street Systems

The proposed Congress Street medical building, although not designed to increase the number of patient beds at MMC, is anticipated to add 200 employees to the MMC campus by 2023 and 324 employees by 2026. Altogether, this increase in employees is estimated to generate over 100 AM, PM, and Saturday peak hour trips. As a result, a Traffic Movement Permit (TMP) is required.

It should be noted that previous MMC site plans reviewed by the city, including the 2013 Bean 2 addition, the East Tower and Visitor Garage expansion approved in early 2018, and the Employee Garage approved in mid-2018, have not individually met the trip generation thresholds for Traffic Movement Permits. As a result, TMPs were not required for those projects. However, as required under TMP regulations, the current TMP application does include analysis of previously approved expansions by MMC, including the Bean 2 addition, in order to assess total change in trip generation on the campus over the past ten years.

The trip generation estimated in the TMP application is based on a projected employment number for 2026, approximately five years following initial occupancy of the new medical building *(Attachment J)*. These trips have been assigned to the roadway network based on both existing employee travel data and observations of the existing transportation system. The traffic study has taken projected shifts in routing into account; for example, the demolition of the existing Employee Garage and the construction of the new Employee Garage on St. John Street will affect employee trips within the immediate study area, shifting traffic away from Gilman Street and towards St. John, and the addition of an entrance on Congress Street will also shift some traffic currently destined for the Bramhall entrance. Lastly, MMC has calculated trip generation associated with the proposed shuttle service from the Employee Garage on St. John Street to both the new north entrance and the existing Bramhall entrance. Mr. Errico has reviewed this methodology and writes,

> *The results of the traffic modeling analysis for area transportation roadways is based on the assumption that most MMC employees will parking in the proposed St. John Street parking garage and not utilize other parking options, particularly on-street. It is recommended that the Applicant provide documentation that employees are parking in MMC parking facilities and identify measures, to be reviewed and approved by City staff, to be implemented to address this issue. It is recommended that this documentation be provided in conjunction with TDM reporting requirements.*

A condition of approval has been drafted to address this comment.

As is customary, the traffic analysis includes a discussion of impacts to roadway capacity, including level of service (LOS) and queue analyses at 11 nearby intersections stretching from Park Street/St. John Street east to Bramhall Street/Congress Street and south to Valley Street/Commercial Street. The level of service analysis, which assumes some imminent changes in the roadway network, such as the elimination of the Congress Street/Valley Street signal, generally shows acceptable levels of service, with some marginal negative impacts, for example to overall level of service at the Congress Street/St. John Street intersection at the AM and PM peak hours. Other intersections, such as Park Street/St. John Street, are anticipated to improve in LOS in the post-development condition. Queue lengths are anticipated to increase on many intersection approaches. However, all intersection approaches studied are anticipated to operate at LOS D or better in the post-development condition.

The traffic analysis provides an examination of existing crash data within the study area for the most recent three-year period. This data shows that there are seven high crash locations within the area studied, including four intersections and three street segments. The traffic study includes an analysis of crash patterns observed at these locations, including pedestrian and bicycle collisions, and in some cases recommends modifications to roadway design, signal timing, or signs to mitigate safety concerns. Mr. Errico has reviewed the analysis and provides the following outstanding comments,

> *The Park Avenue/Valley Street intersection is a High Crash Location…Given significant future changes to the area, the Applicant shall conduct a monitoring study following the opening of the St. John Street Parking Garage and completion of the St. John Street improvements as required by Dunkin Donuts. The methods and scope of the Study shall be approved by City staff. Any improvements required in conjunction with the monitoring study shall be the responsibility of the Applicant.*
>
> *The Congress Street/Gilman Street intersection is a High Crash Location. The Applicant suggests that the future removal of the traffic signal at Congress Street/Valley Street may mitigate crashes…The Applicant shall conduct a monitoring study of the intersection following removal of the traffic signal at Valley Street and the opening of the St. John Street Parking Garage. The*

methods and scope of the Study shall be approved by City staff. Any improvements required in conjunction with the monitoring study shall be the responsibility of the Applicant.

The St. John Street/A Street is a High Crash Location. The Applicant suggests that traffic volume reductions may mitigate crashes. The new employee parking garage will increase traffic volumes in the area and may negatively impact conditions…The Applicant shall conduct a monitoring study of the intersection following the opening of the St. John Street Parking Garage. The methods and scope of the Study shall be approved by City staff. Any improvements required in conjunction with the monitoring study shall be the responsibility of the Applicant.

Congress Street in the vicinity of the project has been classified as a High Crash Location. The Applicant has prepared an improvement plan that considers multi-modal activity/facilities in creating a safe Complete Street. It is my professional opinion that the proposed project will significantly alter the characteristics of the corridor and thus will change motorist behavior. Accordingly, I find the improvement plan to be acceptable with the following conditions:

- *The Applicant shall improve/enhance wayfinding to the existing MOB Parking Garage and the Visitor Garage. Advance directional signage should help to mitigate sudden stops that may have been a contributing factor in crashes. A signage plan shall be provided for review and approval by City staff.*

- *The Applicant shall conduct a monitoring study following the opening of the new Medical Office Building. If crash patterns are not mitigated, the Applicant is responsible for the development of a mitigation plan for review and approval by City staff. Implementation of the approved plan will be the responsibility of the Applicant.*

A condition of approval has been drafted to address these comments. With these conditions, Mr. Errico has recommended approval of a Traffic Movement Permit for the project *(Attachment 2).*

b. Access and Circulation

In the final submittal, the applicant has provided revised site plans, as well as a diagram for the pick-up/drop off area that shows proposed circulation patterns *(Attachment K)*. The final plans include modifications to curbing and striping along Congress Street between Valley Street and Weymouth Street, and on Gilman Street between A Street and Congress Street. Bruce Hyman, the city's Transportation Program Manager, has reviewed the plans and provides the following general comments,

The Applicant is responsible for relocation of utility structures (e.g. hydrants, catch basins, etc.) in order to implement the proposed design.

Provide final details for improvements in the right-of-way, including sidewalks, crosswalks, curb ramps, driveway aprons, detectable warning panels, curbing, tree wells, bus shelter, curb extensions, etc.

Revise striping plan to retain south side parking east of the Visitor's Garage entrance/exit to just west of Bramhall where the climbing lane will transition to Shared Lane Markings (centered in the travel lane). Show (north to south) an 8′ parking lane, 11′ travel lanes, a 6′ climbing bicycle lane, and an 8′ parking lane. This section should continue to Bramhall Street to the east. Please provide plans for restriping the entirety of Congress from Valley Street to Bramhall St/Deering Ave. The outside bike lane lines are to be dashed 6″ lines for a minimum of 50′ in advance of an intersection and through the intersection.

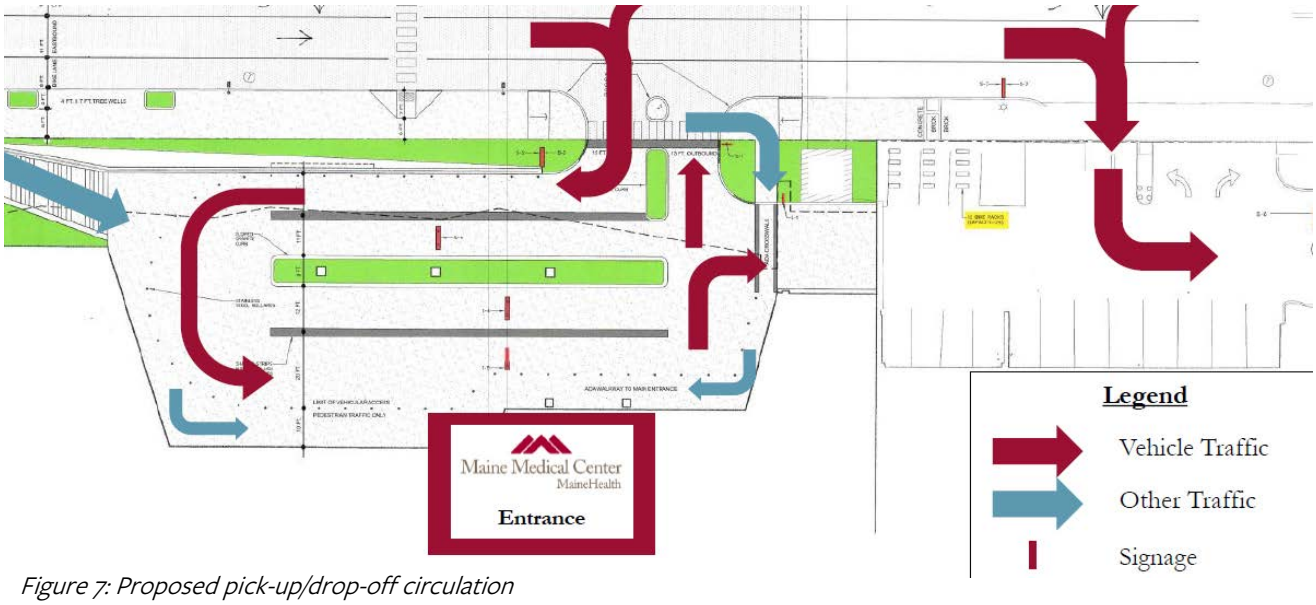


Figure 7: Proposed pick-up/drop-off circulation

> *16′ travel lanes are too wide for the WB approach to Valley Street. Retain existing westbound left turn pocket to Valley Street.*

A condition of approval has been drafted to address these comments.

Vehicle Access

Vehicles are proposed to access the site via a pick-up/drop-off loop located partially underneath the proposed building *(Figure 7)*. This turnaround is proposed with access from Congress Street through a two-way driveway with a center island, approximately 35' in width. Given the width proposed, which exceeds the technical standard, a waiver is required. This waiver is supported by staff.

The pick-up/drop-off area has been designed based on observations of MMC's existing Bramhall entrance. As proposed, the pick-up/drop-off would operate as a one-way, counterclockwise loop, with storage capacity for up to 11 vehicles. The loop would provide direct access to the front door, as well as the Visitor Garage to the east. Exiting visitors could access the loop directly from the Visitor Garage and from there exit to Congress Street.

Bicycle Access

As previously requested by staff, the final plans show a climbing eastbound bicycle lane on Congress Street. In his general comments above, Mr. Hyman has requested that this climbing bike lane be continued to Bramhall Street to the east. From the bicycle network, bicycles would enter the pick-up/drop-off loop integrated with vehicular traffic. Covered bicycle parking is proposed in the ground floor of the adjacent Visitor Garage. In his final review of the bicycle accommodations in the plan, Mr. Hyman writes,

> *Revise plans to show shared bicycle lane markings in the westbound travel lane on Congress Street from Deering Avenue to St. John Street, centered in the travel lane.*
>
> *Bike lanes are to be a minimum of 6′ adjacent to a parking lane.*

A condition of approval has been drafted to address these comments.

Pedestrian Access
The applicant's final submittal includes a Pedestrian Network Plan required as part of the approved IDP. This plan shows pedestrian connections and access points across the campus. Caitlin Cameron, the city's urban designer, has reviewed the plan and offers the following comments,

All diagrams should be updated to reflect proposed improvements not currently shown.

Future Pedestrian Network plan should include Western Promenade improvements associated with the garage site plan approval.

Sidewalk Material Plan should indicate future material rather than existing conditions.

Describe how the public circulation and access points will be indicated.

A condition of approval has been suggested to address these comments.

The final site plans include new concrete sidewalks on Congress Street and Gilman Street, which converge at an open plaza space at the northwest corner of the site. This plaza, which would lie adjacent to the employee shuttle bus pickup/drop off, is proposed in concrete as well, with granite seating walls rimming the two proposed planting areas. The plaza leads to a wide stair in granite, which provides direct pedestrian access to the main entrance via the turnaround above.

As noted previously, the applicant has proposed concrete sidewalks, although both the Congress Street and Gilman Street sidewalks are designated as brick in the City's sidewalk material policy. In their most recent submittal, MMC has clarified the need for a sidewalk material waiver within the Pedestrian Network Plan and provided a formal waiver request. Staff support the use of concrete sidewalk material in front of the new building on Congress Street and Gilman Street, given that the concrete sidewalks would provide continuity to the private plaza design. In the final plans, MMC shows granite banding within the sidewalks on Congress Street. A maintenance agreement for this granite banding has been suggested as a condition of approval. Final sidewalk details should also be provided as noted in comments above.

The applicant's final plans show sidewalk improvements not only in front of the proposed medical building on Congress Street, where a 14' sidewalk is proposed, but also west to the Valley Street intersection. Curb extensions are proposed at Congress Street and Valley Street to reduce crossing distances. In his review of the sidewalk design, Mr. Hyman writes,

Confirm that the design accounts for the fire hydrant on the northwest corner of Congress at Forest Street (the location of the proposed ramp serving the Congress St crossing)

Provide curb re-alignments, possibly to include curb extensions at southwest and northwest corners of Gilman and Congress. Further guidance will be provided.

Curb extension width should be maximum 6′ in extent (measured from curb line), using 10′ radii.

A condition of approval has been drafted to address these comments.

As requested, the applicant's final site plan also shows a sidewalk on the east side of Gilman Street extending south to A Street. A crosswalk is proposed at the A Street intersection. Of this sidewalk, Mr. Hyman writes,

Document clear sidewalk distance around remaining CMP pole and guy wire in proposed the Gilman Street sidewalk. Note that a 5' minimum sidewalk clear width is required around all obstructions in the sidewalk.

Staff has suggested a condition of approval to address this comment.

Within the proposed pick-up/drop-off area, pedestrians would access the front door via bollard-protected routes against the building face. The ADA-accessible route is proposed from the sidewalk at the northeast corner of the site.

Shuttle Access

The site plan application includes details regarding the proposed shuttle operations between the Employee Garage on St. John Street and the new medical building *(Attachment J)*. Employee access from shuttles to the medical building is proposed via card reader through doors at the northwest corner of the building. The Congress Street shuttle route would drop off and pick up employees from this door, operating on a counterclockwise loop via Valley Street, A Street, Gilman Street, Congress Street, and St. John Street. Altogether, MMC proposed to operate 13 shuttles on 15 minute headways during peak hours, seven of which would serve the Congress Street drop off area. A shuttle would also provide access from the Employee Garage to the Bramhall entrance with a route via Danforth, Vaughan, and the Western Promenade.

Staff has reviewed the shuttle drop-off design and raised some questions regarding the length of the queuing area proposed on Gilman Street, which is proposed at approximately 170' in length. Mr. Hyman writes,

The shuttle storage lane appears excessive in length. Please provide documentation on the number of shuttles likely to queue here at the same time (recognizing that the TMP application indicates that seven shuttles will run to this location on 15 minute headways.)

Final design of this area has been suggested as a condition of approval. It is assumed that, with the reduction in this queuing lane, all existing parking on the west side of Gilman Street in this location could be retained.

c. *Public Transit Access*

The site is located on several METRO routes, including METRO Route 1 with cross-peninsula service to Munjoy Hill, Route 9 with service to Deering and North Deering, the METRO Breez from the north, as well as the ShuttleBus Zoom from the south. There are existing transit stops on Congress at Gilman Street and Weymouth Street. Early in the site plan review for the Congress Street hospital building, METRO identified consolidation of these existing stops, in conjunction with their broader bus stop consolidation effort, as a priority for this stretch of Congress Street.

As requested, the final plans include a bus shelter on the south side of Congress Street, and a corresponding bus stop on the north side of Congress Street directly in front of the proposed medical building. The grading plan shows ADA accessible grades around the shelter site, with 5' of clearance in front of the shelter and 4.5' to the right-of-way line behind.

The final plans also show a stop on the north side of Congress west of Forest Street, which results in the loss of several parking spaces. METRO has confirmed that they would prefer an inline transit stop east of Forest Street in the outbound direction, which will mean that the loss of on-street parking is not necessary.

In his review of the transit facility design, Mr. Hyman writes,

Provide final details on METRO shelter, including distances to curb and property line. The shelter design may require further review.

Relocate the north side METRO stop to east of the Forest Street intersection, as METRO has indicated a preference for an inline westbound stop in this location. Show existing parking on north side in front of Salvage to remain from Forest Street to Gilman Street.

A condition of approval has been suggested to address these comments.

d. Parking

The hospital building is proposed with no on-site parking for employees. Instead, off-site parking would be provided at the Employee Garage on St. John Street, with shuttle and pedestrian access between this new facility and the employee entrance on Gilman Street. With regard to visitors, parking is proposed at the adjacent Visitor Garage. Access to this parking is proposed directly from the pick-up/drop-off loop. It should be noted that valet parking is also proposed from within the turnaround area.

On-street parking currently exists on the north side of Congress Street directly across from the proposed hospital building in the block between Gilman Street and Forest Street. As noted above, a condition of approval has been drafted to preserve this on-street parking. In addition, there is existing on-street parking on Congress Street east of the hospital building near Weymouth Street and on Gilman Street south of Congress Street, which is proposed for modification in the final plans. As noted above, staff has suggested striping changes in these areas. This will preserve on-street parking in these locations. Regarding the design of on-street parking more generally, Mr. Hyman writes,

On-street parking should generally be shown as a striped parking lane (individual spaces should not be delineated). The line may vary in off-set from the curb to define a narrower parking lane next to a bike lane (e..g., 7') or be wider (e.g., 8'-9') to reduce the width an adjacent travel lane (11'-12' through travel lanes desired, 9'-10' left turn lanes).

This comment has been addressed within the conditions of approval.

Twelve bicycle racks are proposed within the ground floor of the adjacent Visitor Garage, with access from the pick-up/drop-off turnaround. These racks would provide space for 24 bicycles. Almost 200 bicycle parking spaces are currently provided on the MMC campus.

e. Snow Storage

The submittal states that the applicant will contract with a property management company to remove snow from the site. A snow melting system is proposed within the pick-up/drop-off area.

f. Transportation Demand Management

Because MMC had not yet hired a TDM coordinator at the time of the preceding site plan review for the Visitor Garage and East Tower expansion, that site plan was approved with a condition that the applicant submit a TDM plan prior to issuance of a certificate of occupancy for the East Tower. To satisfy this condition, a TDM plan was included and reviewed under the site plan application for the Employee Garage at 222 St. John Street, then resubmitted under this application *(Attachment R)*. This most recent version of the TDM plan has been informed by MMC's TDM coordinator, and includes a summary of current employee commuting behavior, an analysis of baseline employee parking demand, and a description of existing TDM measures employed by MMC. In the short term, the plan targets a reduction in MMC's parking demand/employee ratio of 2% (or approximately 50 spaces, assuming no change in the number of employees) and in the long term, the plan targets a 5% reduction (or 114 spaces, assuming no change in the

number of employees). The plan lays out a series of strategies designed to achieve those targets, including full transit pass subsidies, implementation of a guaranteed ride home program, a reassessment of parking pricing in the mid-term, enhanced data collection, and improved education and incentives. Additionally, MMC has pledged in their TDM plan to participate in regional partnerships to improve employee travel choice. Annual monitoring reports will be provided to the city.

2. Environmental Quality Standards

a. Preservation of Significant Natural Features

The applicant has provided documentation to confirm that there are no critical habitats, conserved lands, or protected wetlands on the site *(Attachment 5)*.

b. Landscaping and Landscape Preservation

The final plans show five landscape zones, one of which is proposed to serve patients and visitors to the hospital through a roof garden, and the others of which are proposed at ground level on the Congress Street and Gilman Street frontages *(Plans 10 and 26-28)*. The applicant has shown low, evergreen plantings contained within a center island in the arrival area; evergreen climbers, evergreen groundcover, and accents of grass along Congress Street; and triangular seating areas with evergreen groundcover and accent feather reed grass in the plaza at the northwesterly corner of the site. Blueberries and bayberry are proposed along the Gilman Street sidewalk.

The final plans show five honey locust trees in raised tree wells along the Congress Street frontage and three honey locusts in raised tree wells along the Gilman Street frontage. Three serviceberries are also proposed on the Gilman Street frontage to the immediate south of the proposed building. The raised tree well design is proposed with right-angle corners, as opposed to the radius corners preferred by the city for maintenance reasons. Final staff comments include the following:

Staff has suggested a maintenance agreement surrounding the upkeep of these tree wells.

Staff has also suggested that street trees be added to the plans on the south side of Congress Street between Valley Street and Gilman Street. These trees should be specified as honey locusts, in keeping with those to the east of the Gilman Street intersection.

Staff further comments that planting areas adjacent to sidewalk should be designed to be viable and reflect urban environment and pedestrian patterns. These sidewalk-adjacent planting areas should be protected with a curb or planter wall edge to prevent wash out onto the sidewalk and protect the plantings from walking, plows. The planting areas shown on Congress Street and Gilman Street should be revised to include curb edges.

In addition, staff do not think the planting area shown adjacent to the Congress Street out-going driveway is viable and should be converted to concrete as an extended sidewalk where pedestrians will be entering the property.

Revisions to the landscape plans have been suggested as a condition of approval.

c. Water Quality/Storm Water Management/Erosion Control

Staff has also conducted a review of final stormwater management plans. It should be noted that the stormwater system for the medical building is subject to a condition of approval from the site plan review for MMC's East Tower vertical expansion. Over the course of this previous review, there was substantial discussion regarding the potential for hospital connection to separated storm drains in Gilman Street, as opposed to the existing combined system in Congress Street, which drains to the city's most active CSO.

Given existing grades and a complicated network of existing utilities, connection to the separated system was not deemed feasible. As a result, the East Tower was approved subject to a condition which requires that the stormwater system for this Congress Street building "add detention capacity in lieu of stormwater separation in order to reduce the burden of the existing and proposed development on the City's infrastructure."

In keeping with this condition, the Congress Street hospital building stormwater management plan addresses treatment standards, but also focuses on reducing the rate of runoff to the Congress Street combined sewer. The applicant's design includes a subsurface sand filter below the proposed turnaround area, which has been sized to detain and treat not only roof runoff from the proposed Congress Street building, but also the rooftop runoff from the existing Visitor Garage, which currently drains undetained to the combined sewer in Congress Street. During storm events, the subsurface sand filter would hold stormwater runoff prior to discharge to the combined sewer in Congress Street. In addition, the applicant has proposed a green roof treatment on the 2nd floor roof at the building's rear.

Mike Geuthle, of Wright-Pierce, the city's consulting civil engineer, has reviewed the plans, including the requested surface area waiver. Of this waiver, he writes,

General Standard: The applicant has provided information regarding the size and scope of the project indicating the project is subject to the Redevelopment Standard within the City of Portland.

The MaineDEP Stormwater BMP manual indicates that, "The surface area of the filter must be no less than the sum of 5% of the impervious area and 2% of the landscaped area draining to the system.". The proposed system exceeds this threshold in order to accommodate additional surface areas to meet other City goals.

The applicant has provided the following reasoning: 1. Limited sedimentation loading from impervious surfaces due to high percentage of roof areas; 2. Additional pre-treatment is provided in the form of an isolator row; 3. An additional amount of pre-treatment is provided for the garage location through an existing separator unit; 4. Through these three items, the proposed amount of nutrient loading, total suspended solids, and temperature pollution entering the system will be less than other permitted land uses entering the system.

Based on the information provided, we agree that the pollutant loading to the system is anticipated to be limited by the oversized pre-treatment devices, and by the large portion of roof surfaces which typically convey fewer pollutants than many other impervious surfaces.

One other concern is flow rate to the filter from large impervious surfaces. Materials testing during construction is recommended to confirm that the flow rate through the media will match the design permeability.

Regarding the plans in general, Mr. Geuthle writes,

Discharge to Combined Sewer Overflow (CSO) Locations: The applicant has provided information for pre-development and post-development flow rates to the combined sewer system for a 1-inch, 24-hour rain event. This storm event has been mentioned in previous discussions with the applicant and City Department of Public Works (DPW). The applicant has requested written confirmation from City DPW to ensure that all involved parties agree with evaluating this storm event for the CSO location, and has indicated that this confirmation will be provided as it becomes available. This item can be a condition of approval.

Connection to Existing System: The applicant has asked for a written or e-mail confirmation from the Department of Public Works that proposed connections to existing drainage and sewer systems are being completed in accordance with City of Portland Code of Ordinances section 14-526 (b) 3.a, subsection iii and iv. The applicant has indicated that this confirmation will be provided as it becomes available. This item can be a condition of approval.

Plan modifications:

i. *CB 13370 (NE Corner) and CB 12640 (SW corner) are existing basins that are located in proposed crosswalks. If these structures have eccentric cones, rotate them so they are outside of the crosswalk.*
ii. *Structures in ROW are proposed to have eccentric cones. A note should be added to the construction plans indicating that covers and frames should be rotated to be outside of wheel travel lane locations.*
iii. *Sheet C-11: SD-16 callout is obstructed or missing, and should be included on the construction plans.*
iv. *Sheet C-11: Existing Storm Drain Structure Data table shall be updated to include inlet from Pipe SD-13*
v. *Sheet C-11: Existing CB 13395 rim/frame/cover should be reviewed: Other CBs located in sidewalks are being raised and converted to Drainage Manholes (DMHs). Applicant shall confirm if this structure is to remain a CB or a DMH.*

A condition of approval has been suggested to address these comments.

3. Public Infrastructure and Community Safety Standards

a. *Consistency with Related Master Plans*
The site plan application is generally deemed consistent with related master plans.

b. *Public Safety and Fire Prevention*
The final plans include 8" fire service from the Gilman Street water main, as well as 8" fire service from the Congress Street main. The applicant has also provided a life safety plan which documents code compliance *(Attachment Z).* Robert Thompson, of the Fire Prevention Bureau, has reviewed the final plans *(Attachment 5).* He has noted that the address for the proposed building will be 900 Congress Street.

c. *Availability and Capacity of Public Utilities*
With respect to utilities, the applicant has proposed 6" domestic service from an existing water main in Congress Street, as well as 6" domestic service from a main in Gilman Street. A capacity letter from PWD has been provided *(Attachment AA).* Sewer service is proposed from existing 12" main in Gilman Street as well as an existing 12" main in Congress Street. Electrical service is proposed to run underground from existing above ground service on Gilman Street both the north and the south of the site. All utility poles along the Gilman and Congress frontages of the site would be removed.

Mr. Geuthle has reviewed the plans and writes,

The applicant has indicated that capacity to serve letters from utilities will be provided as they become available. [Note that the PWD capacity letter has been received.]This may be considered a condition of approval for the project. The Capacity to Serve process will require a level of coordination between the applicant and utility companies and typically includes compliance with applicable utility standards and details. Central Maine Power and Consolidated Communications should review the plan and verify the depiction of changes to primary electrical and communication lines, respectively

.

Minor modifications to utility layout and design from the capacity to serve process are anticipated, and shall be submitted to the City prior to construction.

The Applicant shall coordinate with the City should the utility layout plan include additional transformer units, pole relocations, or impacts to water or sewer infrastructure.

Sheet C-11: There appear to be conflicts with underground utilities at several structures and pipes. Applicant shall provide additional information for location of proposed utilities at the following pipes and structures: Storm Drain 9, Sanitary Sewer 9, Catch Basin 7, Catch Basin 10

A condition of approval has been suggested to address these comments.

4. Site Design Standards

a. Massing, Ventilation, and Wind Impact

The applicant has provided documentation with respect to the bulk, location, and height of the proposed building *(Attachment BB).* None of these features are deemed likely to result in ventilation or wind impacts.

b. Shadows

The applicant has also provided shadow studies from the MMC Institutional Development Plan *(Attachment CC).* These studies show that the project is not anticipated to result in shadows on publicly accessible open space.

c. Snow and Ice Loading

The applicant has provided documentation on snow and ice loading *(Attachment DD).* The project is not anticipated to result in snow or ice accumulation on public ways or adjacent properties.

d. View Corridors

The project does not abut a protected view corridor.

e. Historic Resources

The project does not lie within or adjacent to a historic district.

f. Exterior Lighting

In the final submittal, the applicant has provided lighting cut sheets for exterior lighting proposed in the plaza area and turnaround, as well as the upper level green roof and along the Gilman Street façade *(Attachment GG)*. All of these fixtures are either downlights or lights to be shielded beneath building or bench overhangs. The final plans also show new street lights on Congress Street.

The applicant has provided photometric plans that document the proposed average and maximum illumination levels. Waivers are necessary with respect to both of these standards. These waivers are supported by staff given the nature of the use involved, where 24-hour access by the public is necessary.

g. Noise and Vibration

The applicant has provided documentation stating that mechanical equipment will largely be located in the basement of the proposed building, with some HVAC units on the roof toward the interior of the campus and away from abutting properties *(Attachment HH)*.





Figures 7 and 8: View from Congress Street looking east, existing (above) and proposed (below)





Figures 9 & 10: Rendering of main entrance; Night rendering from Congress Street

i. Signage and Wayfinding

As noted above, the applicant has provided a revised campus-wide signage plan in the final submission *(Attachment II)*. New signs are proposed as part of the Congress Street medical building and are evaluated for consistency with the master sign plan. All three of these signs are proposed at Congress Street at the grade level and vary in scale for pedestrian and car wayfinding. A new sign appears at the gateway corner of Gilman Street and Congress Street is intended to both mask an existing utility box in this location and signal the main campus. The materials and design are consistent with the master plan. The CS.1 project monument sign facing Congress Street is proposed to be internally lit individual letters; other signs using punch through letters, also internally lit. Ms. Cameron has reviewed the sign plan and provides the following additional comments:

> *Justify the height of the CS.2 Building Identification sign at the driveway entrance which appears to be as tall as 14' at the sidewalk level.*
>
> *Clarify the shape and placement of CS.3 which is shown differently on different plans – will this screen the telephone box from both directions?*

These questions will be resolved through the proposed condition of approval regarding the master sign plan.

j. Zoning-Related Design Standards

The proposed building will replace the existing parking structure at Congress and Gilman Streets and occupy a dominant, gateway position on the MMC campus from the St. John Street approach from Congress Street. The overall building height, as observed in the long-view renderings, is not readily visible from most long distances. A future addition on top of this building will be more impactful on the long views of the campus.

The applicant sought preliminary staff guidance on the design approach for the building and plaza areas prior to submitting this site plan application. The resulting design provides a strong architectural statement at a prominent corner and fulfills the goals of the IOZ for a building that creates a new gateway on Congress Street with a character and material palette that is cohesive with the campus. The stated MMC vision includes integrating inside and outside – achieved here through the high level of fenestration, the entry under the building overhang, the atrium that connects to the street and the sky, the green roof, as well as a "50 year palette" that selects materials based on cues from nature to create timeless environment. This vision includes Sky, Sea, and Land as concepts for material/color selection. The building has a clear, solid base plinth on top of which is the more airy and transparent active and public spaces. The building overhang creates a contemporary form that makes a strong statement appropriate for the gateway location of the building but also gives the building a clear orientation to Congress Street. Cohesiveness is created with design elements found here and in the other recently approved Phase I projects – use of white materials and glass, vertical windows and articulation elements.

The staff design review memo provides a complete analysis of all the applicable design guidelines and staff review for the Congress Street medical building *(Attachment 1)*. This project was reviewed according to the adopted IOZ standards. Previously, staff and the board focused on the following topics:

- Building interface with the ground level and public realm, especially Gilman Street and the landscape design
- Level of activity as it relates to the IDP guidelines
- Legibility of entrance and pedestrian routes

- Building and site lighting, especially related to CPTED and safety concerns

Previously, the Board focused on the relationship of the building to the sidewalk and the legibility and accessibility of the entry. Some revisions were made to delineate pedestrian areas from vehicular areas; however, the paving pattern and banding do not reinforce or directly mark those areas. Curbing, landscape areas, and bollards are being used to direct pedestrians. No changes were made to the building entrance to address these comments.

Generally, staff find the building design to meet the standards and are comfortable with the activity and safety aspects of the building interface with the public realm.

The streetscape design uses elements already found in the existing Congress streetscape and that varies somewhat from the *Technical Manual*. The variations in street tree wells, sidewalk material, and details are acceptable since they are continuing patterns already established in this block on the MMC frontage. The bus shelter should match METRO standards for consistency with the Congress streetscape and system-wide legibility. The street lights on Congress Street will continue the downtown decorative fixture, with Gilman Street relying on cobraheads and building lighting. Gilman is not designated for decorative street fixtures.

XII. SITE LOCATION OF DEVELOPMENT REVIEW

As noted above, the Congress Street medical building is subject to review as an amendment to an existing Site Location of Development approval issued by the city under its delegated review authority. The applicant has submitted an amended Site Location application *(Attachment QQ)*. Findings of the review are summarized as follows.

1. *Financial and Technical Capacity*
   MMC has provided documentation of financial and technical capacity *(Attachment QQ)*.

2. *Traffic Movement*
   See discussion of Traffic Movement Permit under site plan review above.

3. *No Adverse Effect on Natural Environment*
   MMC has provided evidence that there will be no adverse impact on natural resources *(Attachment QQ)*.

4. *Soil Types*
   MMC has provided documentation that the proposed development will be built on soli types suitable to the nature of the project *(Attachment QQ)*.

5. *Groundwater*
   The review has found that the project meets state stormwater management standards *(Attachment 4)* and is not anticipated to impact groundwater resources.

6. *Infrastructure*
   MMC has provided evidence to indicate that they have made adequate provisions for utilities.

7. *Flooding*
   The project is not anticipated to cause flooding or an unreasonable flood hazard.

8. *Stormwater Management*
   As noted above, the review has found that the project meets state stormwater management standards *(Attachment 4)*. Third party monitoring of the installation of the stormwater system and erosion and

sedimentation control during construction shall be required.

XIII. STAFF RECOMMENDATION

Planning Division staff recommends that the Planning Board approve the proposed MMC Congress Street medical building at 900 Congress Street subject to the proposed motion and conditions of approval listed below.

XIV. PROPOSED MOTIONS FOR THE BOARD TO CONSIDER

A. WAIVERS

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board report for the public hearing on December 17, 2018 for application 331-2018 relevant to Portland's technical and design standards and other regulations; and the testimony presented at the Planning Board hearing:

1. The Planning Board **finds/does not find**, based upon the consulting transportation engineer's review *(Attachment 2),* that extraordinary conditions exist or undue hardship may result from strict compliance with the *Technical Manual* standard *(Section 1.7.2.4)* which establishes a maximum driveway width of 24 feet for sites with two-way access, that substantial justice and the public interest are secured with the variation in this standard, and that the variation is consistent with the intent of the ordinance. The Planning Board **waives/does not waive** the *Technical Manual* standard *(Section 1.7.2.4)* to allow a driveway of 35 feet in width on Congress Street;

2. The Planning Board **finds/does not find,** based upon staff review, that extraordinary conditions exist or undue hardship may result from strict compliance with the *Technical Manual* standard (*Section 1.8)* which requires brick sidewalks on Congress Street and Gilman Street, that substantial justice and the public interest are secured with the variation in this standard, and that the variation is consistent with the intent of the ordinance. The Planning Board **waives/does not waive** the site plan standard (*Section 1.8)* to allow concrete sidewalks on Congress Street and Gilman Street;

3. The Planning Board **finds/does not find**, based upon the consulting civil engineer's review *(Attachment 4),* that extraordinary conditions exist or undue hardship may result from strict compliance with the *Technical Manual* standard (*Section 5.II)* which requires that redevelopment projects meet the Chapter 500 standards regarding BMP sizing requirements, that substantial justice and the public interest are secured with the variation in this standard, and that the variation is consistent with the intent of the ordinance. The Planning Board **waives/does not waive** the *Technical Manual* standard (*Section 5.II)* to allow a subsurface stormwater system with less surface area than required per the design criteria.

4. The Planning Board **finds/does not find,** based on staff review, that extraordinary conditions exist or undue hardship may result from strict compliance with the *Technical Manual* standard (*Section 12.2.3)* which establishes average and maximum illumination levels of 1.25 footcandles and 5 footcandles respectively, that substantial justice and the public interest are secured with the variation in this standard, and that the variation is consistent with the intent of the ordinance. The Planning Board **waives/does not waive** the *Technical Manual* standard *(Section 12.2.3)* to allow an average illumination level within the green roof area of 1.84 footcandles and average and maximum illumination levels on the street frontage of 1.34 and 5.4 footcandles respectively.

B. TRAFFIC MOVEMENT PERMIT

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on December 17, 2018 for application 331-2018 relevant to Portland's technical standards and other regulations; and the

testimony presented at the Planning Board hearing, the Planning Board finds that the proposed plan **is/is not** in conformance with 23 MRSA 704-A and Chapter 305 Rules and Regulations pertaining to Traffic Movement Permits, subject to the following conditions of approval, which must be met as follows:

1. In conjunction with TDM reporting requirements, the applicant shall provide documentation regarding employee parking patterns. Should this documentation show that rates of employee use of the St. John Street garage are lower than anticipated, MMC shall identify measures to be implemented to address this issue for review and approval by the Department of Public Works and Planning Authority;
2. Within three months following full occupancy of the Employee Parking Garage on St. John Street and the completion of the St. John Street improvements as required by Dunkin' Donuts, the applicant shall conduct a monitoring study of the Park Avenue/Valley Street intersection, with methods and scope to be approved by the Department of Public Works. Should the monitoring study show that safety-related improvements are necessary, the applicant shall design and implement such improvements with the review and approval of the Department of Public Works and Planning Authority;
3. Within three months of the removal of the traffic signal at Valley Street and full occupancy of the Employee Garage at St. John Street, the applicant shall conduct a monitoring study of the Congress Street/Gilman Street intersection, with methods and scope to be approved by the Department of Public Works. Should the monitoring study show that safety-related improvements are necessary, the applicant shall design and implement such improvements with the review and approval of the Department of Public Works and Planning Authority;
4. Within three months following full occupancy of the Employee Garage on St. John Street, the applicant shall conduct a monitoring study of the St. John Street/A Street intersection, with methods and scope to be approved by the Department of Public Works. Should the monitoring study show that safety-related improvements are necessary, the applicant shall design and implement such improvements with the review and approval of the Department of Public Works and Planning Authority;
5. The applicant shall submit a plan for improving wayfinding to the existing MOB Parking Garage and the Visitor Garage on Congress Street in order to help mitigate sudden stops within this section of roadway for review and approval by the Department of Public Works and the Planning Authority and Planning Authority; and
6. Within one year of certificate of occupancy, the applicant shall conduct a monitoring study. If crash patterns are not mitigated, the applicant shall develop and implement a mitigation plan with the review and approval by the Department of Public Works and Planning Authority.

C. DEVELOPMENT REVIEW and SITE LOCATION OF DEVELOPMENT

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on December 17, 2018 for application 331-2018 relevant to the site plan regulations and *Technical Manual* standards; and the testimony presented at the Planning Board hearing, the Planning Board finds that the plan **is/is not** in conformance with the site plan standards of the land use code, the MMC IOZ Regulatory Framework, and the Site Location of Development standards within the *Technical Manual,* subject to the following conditions of approval, which must be met as follows:

Prior to building permit application:

1. The applicant shall provide final, revised site plans and details, stamped by a licensed professional engineer, addressing the comments of the city's Transportation Program Manager

with respect to multi-modal access and circulation, public transit access, and on-street parking for review and approval by the Department of Public Works and the Planning Authority;

2. The applicant shall submit revised landscape plans addressing street tree and sidewalk planting area comments for review and approval by the City Arborist and the Planning Authority;
3. The applicant shall provide documentation from the Department of Public Works with respect to the storm event modeled within the stormwater management calculations and proposed connections to existing drainage and sewer systems for review and approval by the Planning Authority;
4. The applicant shall provide final, revised utility plans addressing the comments of the city's consulting civil engineer with respect to catch basin locations and conflicts, callouts, inlet information, conversion of catch basins to drainage manholes, and underground utility conflicts for review and approval by the Department of Public Works and Planning Authority;
5. The applicant shall provide evidence of sewer capacity for review by the Planning Authority, and any utility modifications post-approval shall be submitted to the Department of Public Works and Planning Authority for review and approval;

Prior to the issuance of a building permit:

1. The applicant shall provide evidence of license agreements for proposed building encroachments into the right-of-way, including proposed footings and building overhangs, for review and approval by Corporation Counsel and the Planning Authority;
2. The applicant shall provide a revised Construction Management Plan addressing comments related to vibration monitoring, maintenance of traffic, and provisions for right-of-way work for review by the Department of Public Works and the Planning Authority;
3. The applicant shall provide evidence of FAA approvals for review by the Planning Authority;

Prior to the issuance of a certificate of occupancy:

1. The applicant shall provide evidence of a public pedestrian easement for all areas of sidewalk that are proposed on private property for review and approval by Corporation Counsel and the Planning Authority;
2. The applicant shall provide a final, recorded maintenance agreement for the granite banding proposed within the Congress Street sidewalk and raised tree wells to be reviewed and approved by Corporation Counsel and the Planning Authority;
3. The applicant shall submit a revised master sign plan addressing staff comments related to sign size, design, and placement for review and approval by the Planning Authority;
4. The applicant shall provide a revised Pedestrian Network Plan, including updated diagrams, proposed Western Promenade improvements, sidewalk materials, and public circulation and access points for review and approval by the Planning Authority.
5. A licensed engineer in the state of Maine shall provide certification that the stormwater system is installed according to plan and that there are weekly reports confirming compliance with erosion and sedimentation measures during construction for review and approval by the Department of Public Works and Planning Authority;
6. The developer/contractor/subcontractor must comply with conditions of the construction storm water management plan and sediment and erosion control plan based on City standards and state guidelines. The owner/operator of the approved stormwater management system, and

all assigns. shall comply with the conditions of Chapter 32 Storm water including Article III, Post Construction Stormwater Management, which specifies the annual inspections and reporting requirements. A maintenance agreement for the stormwater drainage system shall be submitted for review by Corporation Counsel. Once approved, the document shall be signed and recorded at the Cumberland County Registry of Deeds, with copies to both the Planning Authority and the Department of Public Works.

X. ATTACHMENTS

PLANNING BOARD REPORT ATTACHMENTS

1. Urban Designer review (notes from Caitlin Cameron, 12/13/18)
2. Traffic Engineer review (memo from Thomas Errico, 12/13/18)
3. Transportation Program Manager review (memo from Bruce Hyman, 12/13/18)
4. Civil Engineer Review (memo from Mike Geuthle, 12/13/18)
5. Fire Prevention Bureau review (memo from Mike Thompson, 12/12/18)

PUBLIC COMMENT

PC1. Karen Snyder 10/24/18
PC2. Tim McNamara 11/13/18

APPLICANT'S SUBMITTALS

A. Project Description
B. Completed Application Checklist
C. Right, Title, & Interest
D. Evidence of State and Federal Approvals
E. Zoning Assessment
F. Existing and/or Proposed Easements
G. Waiver Requests
H. Financial Capacity
I. Technical Capability
J. Transportation Analysis
K. Access and Circulation
L. Loading and Servicing
M. Sidewalks
N. Public Transit
O. Off-Street Parking
P. Bicycle Parking
Q. Snow Storage
R. TDM Plan
S. Preservation of Significant Natural Features
T. Landscaping and Landscape Preservation
U. Site Landscaping
V. Parking Lot Landscaping
W. Street Trees
X. Water Quality
Y. Consistency with City Master Plans
Z. Public Safety and Fire Prevention
AA. Adequacy of Public Utilities
BB. Massing, Ventilation, and Wind Impact
CC. Shadows
DD. Snow and Ice Loading

EE. View Corridors
FF. Historic Resources
GG. Exterior Lighting
HH. Noise and Vibration
II. Signage and Wayfinding
JJ. Zoning-Related Design Standards
KK. Construction Management Plan
LL. Neighborhood Meeting Minutes 10/17/18
MM. MMC Planning Board Workshop Presentation 10/25/18
NN. Pedestrian Network Plan
OO. Response to Comments 10/30/18
PP. Response to Comments 11/27/18
QQ. SLOD Application
RR. Draft NAC Charter

PLANS

Plan 1. Boundary Survey
Plan 2. Boundary Survey
Plan 3. Boundary Survey
Plan 4. Demolition Plan
Plan 5. Overall Site Plan
Plan 6. Site Plan, Upper Congress
Plan 7. Site Plan, Mid-Congress
Plan 8. Site Plan, Lower Congress
Plan 9. Site Plan, Gilman
Plan 10. Site Plan, Green Roof
Plan 11. Utility Plan
Plan 12. Utility Plan, Main Entrance
Plan 13. Plan and Profile, Utility Corridor
Plan 14. Grading Plan, Upper Congress
Plan 15. Grading Plan, Lower Congress
Plan 16. Grading Plan, Gilman
Plan 17. Level B Foundation Drainage Plan
Plan 18. Level B Foundation Drainage Plan
Plan 19. Level 1 Foundation Drainage Plan
Plan 20. Details
Plan 21. Details, Stormwater System
Plan 22. Details, Stair Section
Plan 23. Wall Details
Plan 24. Erosion Control Plan
Plan 25. Details, Public Sewer and Storm Drain
Plan 26. Landscape Plan, Upper Congress
Plan 27. Landscape Plan, Lower Congress
Plan 28. Landscape Plan, Gilman
Plan 29. Pre-Development Campus Watershed Plan
Plan 30. Post-Development Campus Watershed Plan
Plan 31. Post-Development Watershed Plan
Plan 32. Exterior Elevation, North
Plan 33. Exterior Elevation, West
Plan 34. Exterior Elevation, South

Plan 35. Rendering
Plan 36. Rendering
Plan 37. Rendering
Plan 38. Rendering
Plan 39. Rendering
Plan 40. Rendering from 295
Plan 41. Rendering from 295
Plan 42. Congress Street Entrance Rendering
Plan 43. Level B Plan
Plan 44. Level 1 Plan
Plan 45. Level 2
Plan 46. Level 3
Plan 47. Level 4
Plan 48. Level 5 Plan
Plan 49. Level 6 Plan
Plan 50. Level 7 Plan
Plan 51. Building Section
Plan 52. Bed Floor plan- Area Overhang
Plan 53. North Façade Calculations

Planning and Urban Development Department
Planning Division

Subject: IOZ Design Review – 22 Bramhall (Maine Medical)

Written by: Caitlin Cameron, Urban Designer

Date of Review: Thursday, December 13, 2018

This memo summarizes the applicable design guidelines and staff review for the project at 22 Bramhall Street – Congress Street Medical Building. This project is reviewed according to the adopted IOZ IDP and Regulatory Framework standards.

The new hospital building will replace the existing parking structure at Congress and Gilman streets and occupies a predominant, gateway view of the MMC campus from the St. John Street approach to the city on Congress Street.

Design Review Comments (*questions/comments and unmet guidelines in red*)**:**

IDP Design Guidelines

1. New buildings will be designed to contribute to the campus vision and organizational goals identified in the Master Facility Plan and the Transportation Plan, and best practice design standards for healthcare.

The applicant sought preliminary staff guidance on the design approach for the building and plaza areas prior to submitting this Site Plan application. The resulting design provides a strong architectural statement at a prominent corner and fulfills the goals of the IOZ for a building that conveys a gateway campus edge with a character and material palette that is cohesive with the campus.

The stated MMC vision includes integrating inside and outside – achieved here through the high level of fenestration, the entry under the building overhang, the atrium that connects to the street and the sky, the green roof, as well as a "50 year palette" that selects materials based on cues from nature to create timeless environment. This vision includes Sky, Sea, and Land as concepts for material/color selection. The white metal panel and large curtain wall system intend to evoke the "sky" – light, recessive, neutral. The white material was also selected to tie into the existing metal panel as well as meet goal of a cohesive campus design seen in the other recently approved Phase I projects.

2. The overall composition and experience of the campus will be considered for cohesive identity from approaches along Congress Street and I-295.

The overall building height, as observed in the long-view renderings, is not very visible from most long distances. A future addition on top of this building will be more impactful on the long views of the campus. This proposed building is seen most immediately in the context of the red brick buildings already on campus. This building is decidedly contemporary and has a different character from the existing brick buildings – that being said, they are not found to be

incompatible and the understanding is that this and future buildings are being used to define a new vision and character for Maine Health. From Congress Street, the metal screens on the neighboring garage have some visual cohesion with its lighter, grey material, vertical articulation elements.

Approval of the East Tower design was based on an understanding that it would be visually cohesive with this Congress Street building. This proposal is consistent with the character presented in that past review. The material palette and fenestration patterns, the high transparency and bringing the outside in are intended to be a cohesive element throughout the campus and also serve the goal of best practice for healthcare in terms of internal organization and quality of spaces. Given the large scale of the building and its prominence on the corner and Congress Street, staff review this project as defining the character for the campus moving forward.

3. Building entrances will be oriented toward, located adjacent to, accessible from, a sidewalk in a public right-of-way to create a pedestrian-oriented environment.

There are two entrances for this building – a staff entrance at the corner of Gilman and Congress streets, and the more public hospital entrance for vehicles and visitors mid-block on Congress Street. For the Gilman entrance, this is turned to Gilman to signify that it is a secondary/staff entrance and not the primary entrance to the building. It is emphasized with a recess and glazing and is directly accessible from the street and where the shuttle pick-up/drop-off will be. The primary entrance, while oriented to Congress Street, is combined with a vehicular drop-off and is deeply recessed from the street. The grade change of the site and Congress Street provide additional challenges to the accessibility of this entrance – the entry floor is at the higher grade than at the Gilman corner. The design attempts to bring legibility and emphasis to this main entrance through the massing, orientation of fenestration, the building overhang, the large atrium, and lighting. The landscape elements and signage are also intended to direct visitors to this entrance including a direct stair from lower Congress up to this level. Staff suggested some revisions to improve the pedestrian safety and access in this design – using visual cues and paving to delineate pedestrian and vehicular realms, placing signage to not limit sight lines for the driveway, clear pedestrian path from sidewalk to entrance.

4. Building designs will relate to and be compatible with the existing, or – in areas of change – planned character of residential and commercial neighbors. Design elements and characteristics to consider include:

- Building placement and relationship to the street

- Overall massing and scale

- Roof forms

- Proportion, directional expression, and composition of facades

- Rhythm of solids to voids

- Rhythm and proportion of openings

- Rhythm of entries and projections

- Relationship of materials, texture, and color

The institutional use is anomalous within the streetscape and neighborhood – it is therefore appropriate for the building to convey this use and have a contemporary expression while at least being compatible, not replicating, the mixed-use and residential character of the surrounding streetscapes. The buildings on the MMC campus are larger in length and height than the surrounding context – scaling elements and sensitive relationships to the street are important for this interface with neighboring residential and low-rise mixed-use buildings.

The project sits at the corner of Gilman and Congress streets and must therefore mediate between those two contexts. Gilman is a quieter street that becomes predominantly residential on one side. This has traditionally been and continues to be a "B" street, especially given the grade change, with less active uses and façade treatments. The proposal appropriately places the active staff entrance at the corner and maintains the street wall but the building edge is a solid, inactive wall. There is some activity, visual interest, and liveliness brought through the upper floors. The building adequately conveys this as a side elevation and places emphasis on its Congress Street orientation as the main street.

The approach on Congress Street is the most critical and the building placement, massing, and overall character are successful in creating a gateway experience that is appropriately orient to Congress Street, indicates the entrances, and provides visual interest. The material palette, massing, fenestration patterns, and overall design character convey the institutional use, expresses its time, and achieve the goals of holding the corner, creating urban street walls, and setting up a gateway experience while allowing for the space at the ground level to mitigate and transition the scale impacts of this long building.

5. Façade materials of buildings will be of high quality, and contribute to an attractive public realm.

The materials are of high quality – stone veneer, metal panel, glass – and contribute overall to the public realm. The material palette is used in a way that alleviates the scale and length of the building, providing visual interest and activity while also conveying the nature of the uses inside. The palette is definitively contemporary and appropriate to the institutional use and sets itself apart from the existing context of predominantly mixed-use and residential buildings.

*6. The design process will **consider long views** of new buildings including roofs and associated structures to minimize visual impacts and **provide visual interest**. Rooftop appurtenances will be either screened from view or integrated into the building design, and will not be visible from adjacent streets, Western Promenade, or the Congress Street approach (helipad excluded).*

Staff find the building has little visibility from long views into the city. It is not anticipated this phase of the building will be readily visible from the Western Prom. The approach on Congress Street is the most critical and the building placement, massing, and overall character are successful in creating a gateway experience that is appropriately orient to Congress Street, indicates the entrances, and provides visual interest. The long façade on Congress Street is made visually interesting with the fenestration pattern, massing, and "layering" of the floors and material palette.

Some rooftop mechanicals are housed in an area setback to the interior of the lot and are adequately integrated into the building forms. However, there are some small rooftop appurtenances are not included in the rendered images – there will be some stacks that poke

through this roof. From the ground level, these will not be visible. But it is important to consider that the roof as perceived from above will not be as flat and clean as shown. There is also a green roof section of the building, but again, its height and position mean it will not be viewed from many places. The building is low and difficult to perceive from the long views – a future phase addition is also intended above this building.

7. Vibrant, contributing and sustainable active ground floors will be provided to add activity and a sense of place to the priority node identified in the City's Comprehensive Plan.

The site is at a corner with two street facades but also has significant grade changes meaning there are essentially two floors of the building that meet the street. The building also programmatically requires a whole basement level be dedicated to housing mechanical uses. These grade changes and the mechanical uses on the lower ground level of Gilman and a portion of Congress Street make it challenging to create active uses at the lower street level. See comments in Guideline 8.

The upper Congress Street ground floor is much more active because it houses the vehicular entrance to the visitors garage, vehicular drop off for the hospital and the primary hospital entrance.

8. In areas where the occurrence of limited blank facades along public rights-of-way are unavoidable due to changes in topography or building use requirements, the following strategies will be used to mitigate visual impact:

- providing elements of visual interest along any black walls facing public streets, and,

- working with the City of Portland to ensure adequate lighting of public sidewalks to create a safe pedestrian experience.

The lower level (mechanical floor) includes some blank facades. Proposed strategies to alleviate this condition include the staff entrance at the corner, the windows into the circulation area, the open, landscaped plaza, and the highly fenestrated upper floors. Some visual interest at the Gilman Street interface will come from a textured material, the recessed entrance. The site and building lighting is designed to highlight the landscape and building materials – the lighting is recessed wall lights that wash down towards the sidewalk providing some illumination of the walking surface but also a landscape feature. These light features will also highlight the stairway and entrance area directing pedestrians towards the main entry. The street lights will provide sufficient sidewalk lighting for safety.

When it comes to the inactive level facing Congress Street, the proposed strategy includes three windows into the circulation space, the plaza space, landscape buffers between the sidewalk and the blank wall, and again, some seaming and texture in the material. Staff are generally satisfied with this approach given the constraints thought the City Arborist has yet to weigh in on the plant selection.

9. Any parking structure within the IOZ will . . .: Not applicable

Building Relationship to Public Street

1. ***Urban Main Street (Congress Street)***
   MMC buildings abutting Congress St will be designed to:
   - *Provide urban-levels of density*

- *Create an urban street wall that provides a sense of enclosure to the public realm*
- *Have their primary orientation towards Congress Street*
- *Activate the public sidewalk with building entrances, lobbies, etc.*
- *To the extent possible, given programmatic needs, provide visual interest and ensure pedestrian safety with views into and out of the building along the public sidewalk*
- *To the extent possible, given programmatic needs, provide space for community-oriented uses such as services or retail that can be shared between MMC users, neighbors, and the broader Portland community*
- *Support the existence of neighborhood amenities such as restaurants and other retail uses providing services to local residents and employees both during the day and evening hours.*

The building's primary orientation is towards Congress Street. The new building is closer to the street than the existing condition, and while still setback from the property line, a strong street wall is created that is angled to create an appropriate gateway orientation to those entering the city but also allows space for a ground floor public plaza interface and buffer given the height of the building. The building is activated by the primary entrance and atrium/lobby on Congress Street. The staff entrance at the corner provides some level of activity while remaining deferential to the more public and visible entrance mid-block. That entrance is further emphasized with the fenestration, recess, lighting, and direct stairway. Where program precludes active uses and visibility, the landscape plaza provides a public amenity between the sidewalk and the building. The landscape design is intended to soften and mitigate the absence of active uses within this portion of the building. The massing of the building provides an overhang and sense of enclosure.

3. Local Residential Street (Gilman Street)

The building design appropriately places the staff entrance and shuttle pick-up/drop off at the Congress Street commercial corner. As the building turns up the street, it becomes less active – the building interface is a minimal building wall and the sidewalk ends into landscape area. This is similar to the existing condition and provides an appropriate transition to the more private, residential portion of the street – the activity, high levels of fenestration, and lighting are most appropriate close to the Congress Street commercial corridor. The sidewalk was extended here to A Street with a crosswalk as requested by staff.

Crime Prevention Through Environmental Design (CPTED)

MMC will incorporate the following design strategies that have been demonstrated to deter crime:

- *Providing a clean and aesthetically pleasing campus environment that is designed with vandal-resistant materials*
- *Providing clear and properly-sized signs in safe locations to ensure safe wayfinding*
- *Ensuring that paths from transit stops, bike storage areas, and parking areas to main pedestrian entrances are well-lit, with clear sight lines*
- *Designing street-level elevations to minimize potential hideouts*
- *To the extent possible, given clinical program demands, providing views in and out of building ground floors populated by users to serve as "eyes on the street"*
- *Generating foot traffic on public sidewalks with pedestrian entrances*

The mechanical uses on the ground level of Gilman and a portion of Congress Street create some CPTED challenges because active ground floor uses are not possible here to generate foot

traffic or provide views in and out of this level. Proposed strategies to alleviate this condition include the staff entrance at the corner, the windows into the circulation area, the open, lit plaza, and the highly fenestrated upper floors, as well as the transit shelter. These components, while not as active as commercial space, will provide some activity and "eyes on the street" in the absence of very active ground floor uses. The shuttle pick up/drop off will also be on Gilman Street, creating additional activity.

The upper level of Congress Street is much more active/public with a lobby and includes high levels of fenestration and lighting – staff are do not have CPTED concerns in this location.

It is important to provide adequate lighting and sight lines on Gilman given the inactive nature of the ground floor and that the street character is smaller and residential. The combination of street lighting and feature landscape lighting will provide sufficient light levels for safety and sense of activity while also providing some moments of visual interest by highlighting material textures, plantings, and the stairway up to the entrance level.

Mitigating Impacts Through Design

Minimizing Shadow Impacts - Shadow impacts were evaluated as part of the IDP process. The proposed project is shorter but also closer to the street than the existing garage. The impacts as shown in the IDP figures 5.17 through 5.20 show that additional shadow is created on the street year round and also for one residential building in the winter by this building.

Context-Sensitive Lighting Design – Site lighting is proposed to be a combination of building lighting and landscape strip lighting under the planter walls. The applicant provided renderings of the building at night to reflect the character of that building lighting – the lighting does put emphasis on the main entrance and large atrium space while downplaying the staff entrance. Building lighting in combination with the street lighting on Gilman will ensure adequate light levels for the sidewalk activity. Photometric plans show adequate lighting levels on the sidewalks and plaza areas. Signage will include internally illuminated letters – staff are not concerned about this approach.

Mitigating Wind Impact – No information was provided to evaluate this item.

Preserving and Enhancing Viewsheds – The building expansions do not impact Western Promenade viewsheds. This expansion does not significantly increase the visibility of the campus from long views (see application materials). In those few instances where the East Tower and new medical building are visible together, the applicant hopes that the design elements (materials, colors, window patterns) will create campus cohesion. The building's impact is most significant on Congress Street and the westerly approach. Staff consider this building design and placement to meet the intent of enhancing the viewshed by creating a more significant and active gateway to the campus and Congress Street generally.

Regulatory Framework

(c)1. Mixed Uses: . . . *healthcare facility development fronting onto Congress Street and St. John Street shall activate the public realm, to the extent able, with uses such as service and retail/restaurant, landscaping, active building entrances, pocket parks, etc., on the ground or other publicly accessible level, consistent with the design intent contained in the approved IDP. . .*

The building includes several programmatic needs fronting onto Congress and Gilman streets – the biggest challenge is accommodating the mechanicals that occupy the entire lower level of this building. The program otherwise includes "back of house" staff spaces and the more public hospital spaces. Uses such as retail are not able to be accommodated in this case.

In the IOZ, this portion of Congress Street is identified to include both "Street activation through the location of entrances, windows, etc." at the corner of Gilman and Congress and "Limited blank facades" (Figure 5.15 Frontage: Types of Activation) mid-block. Gilman Street does not have an activation designation other than at the corner.

The grade and program limit the amount of active frontage on both Gilman and Congress streets. The project meets this standard in the followings ways:

- Entrances: The Gilman Street corner (with the "Street activation" designation) is activated with the employee entrance that is scaled appropriately to the façade and includes transparency. Uphill at a different grade, Congress Street includes the main entrance into the new medical building for both pedestrians and cars. This entrance is emphasized with high levels of fenestration, signage, a direct stair from the plaza area, and building lighting.
- Fenestration – the Gillman/Congress corner includes some fenestration where staff entrance and circulation is taking place. Otherwise, these facades are not able to provide fenestration due to the mechanicals at this level.
- Landscape – Since active uses are not possible at the Gilman/Congress level, enhanced landscape and plaza space is proposed with seating height walls, plantings, lighting, paving pattern, and direct stair to the upper level, more active building entrance.

On Gilman Street, other than the staff entrance at the corner, the façade is blank. The applicant's design strategy is to treat the ground level as a solid, rock-like foundation with a stone veneer material that has a scale and texture that provides some articulation and visual interest. However, the applicant claims it is not possible, given the mechanical uses and grade changes, to add elements such as doors, windows, or active uses on this façade. The upper floors will be active day and night with staff circulation, offices, and break rooms on this end of the building.

(e) Design: *New buildings within the IOZ shall adhere to the Design Guidelines set forth in Chapter 5: Design of the IDP and the site plan standards of the City of Portland.*

See section above and Planning Board report regarding these referenced standards.

(f) Signs: . . . *a unified campus-wide Signage Plan shall be submitted for review and approval by the Planning Authority. . . . Signs shall be designed in accordance with the campus-wide Signage Plan. All signs shall be designed in proportion and character with building facades and adjacent street typology. All signs shall be coordinated with the building and landscaping design and be constructed of appropriate, permanent, high quality materials and finishes.*

- Campus-wide Signage Plan: The draft campus-wide signage plan is included in this submission. Staff had the following comments:
  - Signs will not be permitted on properties not owned by MMC – remove the proposed sign on City property at Bramhall Square on page 13. Provide evidence of permission to install sign on property on Bramhall Street not owned by applicant.
  - Sight line analysis was provided for signs adjacent to driveways – concerns have been addressed.
  - There are concerns about the height of some monument signs - sight lines and pedestrian scale are factors here. Generally, these were reduced in scale except for the sign on Congress Street adjacent to the driveway which

will be near 14' tall next to the sidewalk – provide justification for the height of that sign.
    - Generally, correct discrepancies found in the plans.
- Individual Sign Design:
    - South parking lot signage: Sign was revised – one sign only as requested.
    - CS.1: Size was reduced, lighting will be internally illuminated letters
- Materials and Finishes: The materials and finishes include painted aluminum with either plastic push through letters for monument signs or surface applied vinyl copy for signs attached to the building, fences, or walls. In some cases, the existing steel supports are being re-used which is dictating the width and proportions of the signs. These materials and finishes meet the standard. Stone veneer was removed from the palette.

Portland Maine Yes. Google's good here.

Helen Donaldson <hcd@portlandmaine.gov>

PNP comments

Caitlin Cameron <ccameron@portlandmaine.gov> Fri, Dec 14, 2018 at 11:29 AM
To: Helen Donaldson <hcd@portlandmaine.gov>

Here is what I suggest for a ped network condition of approval as a master plan document that will be reference in future phases:

Prior to issuance of building permit:
The Pedestrian Network Plan shall be revised and submitted for approval by Planning Staff in the following ways:
- All diagrams should be updated to reflect proposed improvements not currently shown
- Future Pedestrian Network plan should include Western Promenade improvements associated with the garage site plan approval
- Sidewalk Material Plan should indicate future material rather than existing conditions
- Describe how the public circulation and access points will be indicated

[Quoted text hidden]

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Caitlin Cameron, AICP, Associate AIA, LEED AP
Urban Designer
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Portland Maine | Yes. Google's good here.

Helen Donaldson <hcd@portlandmaine.gov>

MMC Office Building Final Traffic Comments

Tom Errico <thomas.errico@tylin.com> Thu, Dec 13, 2018 at 10:40 AM
To: Helen Donaldson <HCD@portlandmaine.gov>

Hi Nell – The following is a status update on prior comments and represent Final Traffic Comments. I have separated the comments that are associated with issuance of a Traffic Movement Permit.

Traffic Movement Permit

The following comments and Conditions of Approval are associated with issuance of a Traffic Movement Permit. The review of the project was based upon the project meeting safety and congestion standards contained in the Permit regulations. These standards include:

Unsafe conditions. Road segments, intersections, or development entrances and exits may be deemed as unsafe when traffic encounters conditions such as, inadequate turning radii , poor geometrics, limited sight distance or high accident locations. High accident locations are road segments or intersections where eight (8) or more accidents have occurred over the most recent three (3) year period, and the "critical rate factor" is greater than one (1.0). The applicant shall submit a proposal to improve or eliminate the unsafe conditions if they exist or if they are determined to be created or exacerbated by the proposed development.

Unreasonable congestion. Level of Service D, as determined from a capacity analysis, is considered the minimum level of service needed to provide safe and convenient traffic movement. Where a road, intersection, or any approach lane to the specific intersection or intersections being evaluated in the vicinity of the proposed development is determined to operate at LOS E or LOS F in the horizon year, the proposed development is considered to result in unreasonable congestion, unless: Improvements will be made to raise the level of service of the road or intersection to D or above.

- I generally find the methods used in the development of the base traffic volumes to be reasonable and acceptable. It should be noted that the volume timeframe for the analyses was the peak hour of the roadway system, which does not correspond to employee peaking in the morning (employees arrive before the peak hour). The Applicant should provide documentation noting traffic volumes on roadways during both the peak hour of the system and peak hour of traffic generation from MMC.

Status: The Applicant has provided traffic volume information for the noted time periods and I find their response and analysis time-period to be acceptable.

- The Park Avenue/Valley Street intersection is a High Crash Location. The Applicant shall provide specific recommendations with implication of such changes for review and consideration.

Status: Given significant future changes to the area, the Applicant shall conduct a monitoring study following the opening of the St. John Street Parking Garage and completion of the St. John Street improvements as required by Dunkin Donuts. The methods and scope of the Study shall be approved by City staff. Any improvements required in conjunction with the monitoring study shall be the responsibility of the Applicant.

- The Congress Street/Gilman Street intersection is a High Crash Location. The Applicant suggests that the future removal of the traffic signal at Congress Street/Valley Street may mitigate crashes. I continue to review this, but a monitoring requirement post signal conditions may be suggested.

Status: The Applicant shall conduct a monitoring study of the intersection following removal of the traffic signal at Valley Street and the opening of the St. John Street Parking Garage. The methods and scope of the Study shall be approved by City staff. Any improvements required in conjunction with the monitoring study shall be the responsibility of the Applicant.

- The St. John Street/A Street is a High Crash Location. The Applicant suggests that traffic volume reductions may mitigate crashes. The new employee parking garage will increase traffic volumes in the area and may negatively impact conditions. I continue to review this, but a monitoring requirement after the employee parking garage is open may be suggested.

Status: The Applicant shall conduct a monitoring study of the intersection following the opening of the St. John Street Parking Garage. The methods and scope of the Study shall be approved by City staff. Any improvements required in conjunction with the monitoring study shall be the responsibility of the Applicant.

- Park Avenue/St. John Street is a High Crash Location. The Dunkin Donuts project on St. John Street will likely be implementing improvements to the northbound St. John Street approach. The DD scope of this work is not expected to mitigate all crash patterns. The Applicant shall specifically recommend strategies for mitigating all crash patterns that are correctable by improvements.

Status: The Applicant has recommended traffic signal timing adjustments and the City can implement those changes. No further action is required of the Applicant.

- Valley Street between and A Street and C Street is a High Crash Location. The Applicant noted at the TMP Scoping Meeting that traffic volumes will be declining on Valley Street in this area and thus may reduce collisions. The Applicant shall document specific before/after traffic volumes changes on Valley Street as part of assessing mitigation of crash rates.

Status: The Applicant has provided supporting documentation noting the reduction in traffic volumes expected for Valley Street. I have no further comment.

- The Congress Street/St. John Street intersection is not a High Crash Location but experienced 25 crashes over the reported three-year period. The Applicant shall conduct a safety review of the intersection.

Status: The Applicant has provided the requested information. The changes being implemented on St. John Street (implementing a three-lane roadway) in conjunction in the Dunkin Donuts project would be expected to mitigate some crash patterns. I have no further comment.

- Traffic Movement Permit regulations requires Applicants to document incremental changes to a site over the prior 10 years to determine factors that have influenced traffic generation from the site. In my professional opinion, the Applicant has not provided documentation that adequately addresses historical changes at MMC.

Status: The Applicant has provided a summary of historical campus changes and I find the documentation to be reasonable and no changes are required for traffic study assumptions. I have no further comment.

- The Applicant shall provide specific sight distance measurements at the Congress Street/Drop-Off driveway according to Site Plan information.

Status: The Applicant has provided the requested information and I have no further comment.

- The Park Avenue/St. John Street intersection has improving levels of service and delay following project build-out. The Applicant should specifically note any traffic signal equipment modifications that are needed to accomplish the noted optimization.

Status: The Applicant assumed traffic signal timing adjustments and the City can implement those changes. No further action is required of the Applicant.

- The Commercial Street/Valley Street intersection has improving levels of service and delay following project build-out. The Applicant should specifically note any traffic signal equipment modifications that are needed to accomplish the noted optimization.

Status: The Applicant assumed traffic signal timing adjustments and the City can implement those changes. No further action is required of the Applicant.

- I continue to review traffic model output for vehicle queuing and will provide comments in the future.

Status: The SimTraffic model notes some intersections will have long vehicle queues. The proposed project does not significantly impact queue lengths and improvements associated with signal timing adjustments would be expected to mitigate project impacts. I have no further questions.

- The Congress Street/St. John Street intersection was modeled assuming existing roadway conditions. The Applicant shall also conduct an analysis assuming the Dunkin Donuts improvements on St. John Street are implemented (converting St. John Street from four lanes to three lanes).

Status: The Applicant has conducted the noted evaluation and acceptable traffic operations are predicted. I would note that in conjunction with approval of the St. John Street Parking Garage, the Applicant is required to upgrade the traffic signal equipment at this intersection, which is expected to improve efficiency. I have no further comment.

- **Congress Street in the vicinity of the project has been classified as a High Crash Location. The Applicant has prepared an improvement plan that considers multi-modal activity/facilities in creating a safe Complete Street. It is my professional opinion that the proposed project will significantly alter the characteristics of the corridor and thus will change motorist behavior. Accordingly, I find the improvement plan to be acceptable with the following conditions:**
  - **The Applicant shall improve/enhance wayfinding to the existing MOB Parking Garage and the Visitor Garage. Advance directional signage should help to mitigate sudden stops that may have been a contributing factor in crashes. A signage plan shall be provided for review and approval by City staff.**
  - **The Applicant shall conduct a monitoring study following the opening of the new Medical Office Building. If crash patterns are not mitigated, the Applicant is responsible for the development of a mitigation plan for review and approval by City staff. Implementation of the approved plan will be the responsibility of the Applicant.**

- **The results of the traffic modeling analysis for area transportation roadways is based on the assumption that most MMC employees will parking in the proposed St. John Street parking garage and not utilize other parking options, particularly on-street. It is recommended that the Applicant provide documentation that employees are parking in MMC parking facilities and identify measures, to be reviewed and approved by City staff, to be implemented to address this issue. It is recommended that this documentation be provided in conjunction with TDM reporting requirements.**

Other Non-TMP Comments

- **I have reviewed the Construction Management Plan and generally find it to be acceptable. Some specific comments:**
  - **It is recommended that further discussion on the duration of the Congress Street sidewalk closures be included.**
  - **Supplemental pedestrian safety devices will be required during the sidewalk closure time period (to safely cross pedestrians for the sidewalk detour).**
  - **All sidewalk detours shall be ADA compliant.**
  - **Changes to the lane configuration on Congress Street west of Gilman Street is likely and may need to be included in the plan.**
  - **A significant amount of construction activity will be required for utility and street construction work and specific plans shall be development for review and approval.**

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
TY LIN INTERNATIONAL
12 Northbrook Drive
Falmouth, ME 04105
+1.207.781.4721 main
+1.207.347.4354 direct
+1.207.400.0719 mobile
+1.207.781.4753 fax
thomas.errico@tylin.com
Visit us online at www.tylin.com
Twitter | Facebook | LinkedIn | Google+

"One Vision, One Company"

Portland Maine Yes. Google's good here.

Helen Donaldson <hcd@portlandmaine.gov>

draft striping, sidewalk comments for MMC

Helen Donaldson <hcd@portlandmaine.gov> Thu, Dec 13, 2018 at 8:49 PM
To: Helen Donaldson <hcd@portlandmaine.gov>

---------- Forwarded message ---------
From: **Bruce Hyman** <bhyman@portlandmaine.gov>
Date: Thu, Dec 13, 2018 at 3:48 PM
Subject: Re: draft striping, sidewalk comments for MMC
To: Helen Donaldson <hcd@portlandmaine.gov>
Cc: Tom Errico <thomas.errico@tylin.com>, Jeremiah Bartlett <jbartlett@portlandmaine.gov>

General

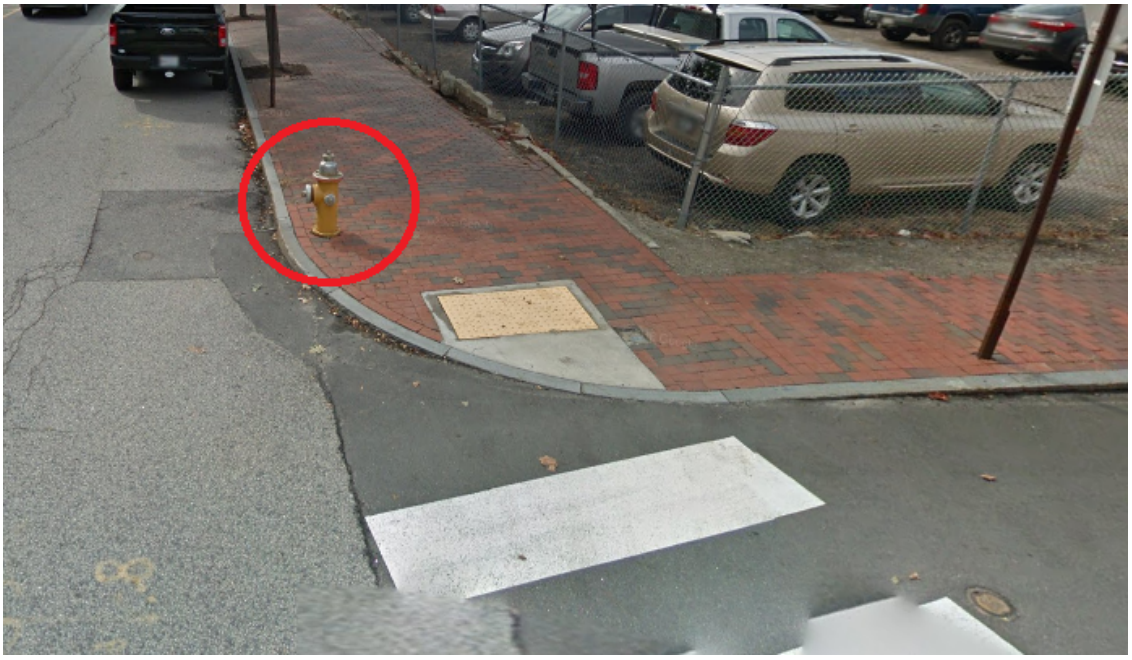
- The Applicant is responsible for relocation of utility structures (e.g. hydrants, catch basins, etc.) in order to implement the proposed design.
- On-street parking should generally be shown as a striped parking lane (individual spaces should not be delineated). The line may vary in off-set from the curb to define a narrower parking lane next to a bike lane (e..g., 7') or be wider (e.g., 8'-9') to reduce the width an adjacent travel lane (11'-12' through travel lanes desired, 9'-10' left turn lanes).
- Revise plans to show shared bicycle lane markings in the westbound travel lane on Congress Street from Deering Avenue to St. John Street, centered in the travel lane.
- Provide final details for improvements in the right-of-way, including sidewalks, crosswalks, curb ramps, driveway aprons, detectable warning panels, curbing, tree wells, bus shelter, curb extensions, etc.

C05-02 Upper Congress Street

- Revise striping plan to retain south side parking east of the Visitor's Garage entrance/exit to just west of Bramhall where the climbing lane will transition to Shared Lane Markings (centered in the travel lane). Show (north to south) an 8' parking lane, 11' travel lanes, a 6' climbing bicycle lane, and an 8' parking lane.
- This section should continue to Bramhall Street to the east. Please provide plans for restriping the entirety of Congress from Valley Street to Bramhall St/Deering Ave. The outside bike lane lines are to be dashed 6" lines for a minimum of 50' in advance of an intersection and through the intersection.

C05-03 Mid-Congress Street

- Relocate the north side METRO stop to east of the Forest Street intersection, as METRO has indicated a preference for an inline westbound stop in this location. Show existing parking on north side in front of Salvage to remain from Forest Street to Gilman Street.
- Confirm that the design accounts for the fire hydrant on the northwest corner of Congress at Forest Street (the location of the proposed ramp serving the Congress St crossing)
-



C05-04 Lower Congress Street

- Provide final details on METRO shelter, including distances to curb and property line. The shelter design may require further review.
- Provide curb re-alignments, possibly to include curb extensions at southwest and northwest corners of Gilman and Congress. Further guidance will be provided.
- Curb extension width should be maximum 6' in extent (measured from curb line), using 10' radii.
- 16' travel lanes are too wide for the WB approach to Valley Street. Retain existing westbound left turn pocket to Valley Street.
- Bike lanes are to be a minimum of 6' adjacent to a parking lane

C05-05 Gilman Street

- The shuttle storage lane appears excessive in length. Please provide documentation on the number of shuttles likely to queue here at the same time (recognizing that the TMP application indicates that seven shuttles will run to this location on 15 minute headways.)
- Retain all existing west side parking. Shorten shuttle queue lane to accommodate this.
- Document clear sidewalk distance around remaining CMP pole and guy wire in proposed the Gilman Street sidewalk. Note that a 5' minimum sidewalk clear width is required around all obstructions in the sidewalk.

--
Bruce Hyman
Transportation Program Manager
Transportation Division

Department of Planning & Urban Development
389 Congress Street
Portland, Maine 04101
(207) 874-8717 phone

bhyman@portlandmaine.gov
http://www.portlandmaine.gov/1363/Transportation-Division
Yes! Transportation's Good Here ....

WRIGHT-PIERCE
Engineering a Better Environment

MEMORANDUM

TO:	Helen Donaldson, Sr. Planner	**DATE:**	12/6/2018
FROM:	Michael Guethle, PE; Ryan Wingard, PE	**PROJECT NO.:**	13982C
SUBJECT:	Gilman St. - 22; MMC Parking Building (PL-000331-2018)		

Wright-Pierce has reviewed the Level III Site Plan Application information provided for the Congress Street Patient Care Building proposed at 22 Gilman Street. The project will include redeveloping an existing parking garage into 64 modern patient rooms and 19 procedure rooms.

Documents Reviewed by Wright-Pierce:

- Level III Site Plan application, dated (most recent) November 30, 2018.
- Engineering Permitting Plans, dated (most recent) November 28, 2018.
- Construction Management Plan, dated November 6, 2018.
- Response to Reviewer Comments #2, dated November 28, 2018.

Comments:

1) Level III Site Plan applications with the City of Portland must submit a stormwater plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules. This includes conformance with the Basic, General, and Flooding Standards (Ref: Technical Manual, Section 5. II. Applicability in Portland. C. a.; and Ref: City of Portland Code of Ordinances Sec. 14-526. Site Plan Standards, (b). 3. b.)
    a. General Standard: The applicant has provided information regarding the size and scope of the project indicating the project is subject to the Redevelopment Standard within the City of Portland.
        i. The MaineDEP Stormwater BMP manual indicates that, “The surface area of the filter must be no less than the sum of 5% of the impervious area and 2% of the landscaped area draining to the system.”. The proposed system

exceeds this threshold in order to accommodate additional surface areas to meet other City goals. The applicant has provided the following reasoning:

1. Limited sedimentation loading from impervious surfaces due to high percentage of roof areas;
2. Additional pre-treatment is provided in the form of an isolator row;
3. An additional amount of pre-treatment is provided for the garage location through an existing separator unit;
4. Through these three items, the proposed amount of nutrient loading, total suspended solids, and temperature pollution entering the system will be less than other permitted land uses entering the system.

ii. Based on the information provided, we agree that the pollutant loading to the system is anticipated to be limited by the oversized pre-treatment devices, and by the large portion of roof surfaces which typically convey fewer pollutants than many other impervious surfaces.

iii. One other concern is flow rate to the filter from large impervious surfaces. Materials testing during construction is recommended to confirm that the flow rate through the media will match the design permeability.

2) Discharge to Combined Sewer Overflow (CSO) Locations

a. The applicant has provided information for pre-development and post-development flow rates to the combined sewer system for a 1-inch, 24-hour rain event. This storm event has been mentioned in previous discussions with the applicant and City Department of Public Works (DPW). The applicant has requested written confirmation from City DPW to ensure that all involved parties agree with evaluating this storm event for the CSO location, and has indicated that this confirmation will be provided as it becomes available. This item can be a condition of approval.

3) Connection to Existing System:
    a. The applicant has asked for a written or e-mail confirmation from the Department of Public Works that proposed connections to existing drainage and sewer systems are being completed in accordance with City of Portland Code of Ordinances section 14-526 (b) 3.a, subsection iii and iv. The applicant has indicated that this confirmation will be provided as it becomes available. This item can be a condition of approval.

4) Proposed Drainage Design
    a. Additional information has been provided on Sheet C30-01, C11-01, C40-01, and C30-04 to indicate site grading and pipe information. The following shall be clarified:
        i. SD-2 pipe references have been qualified with two separate pipes; Pipe SD-2 and SD- 2.1. No further action necessary.
        ii. SD-3 pipe size has been confirmed to be 15". No further action necessary.
        iii. Data provided in the project pipe tables have been modified so that pipe slopes generally match slopes as calculated from the invert and length data. No further action necessary.
        iv. A 1% cross-slope is shown for the sidewalk locations of Congress Street. The applicant has confirmed that a longitudinal slope of 5.5% is being provided, and as such surface ponding is not anticipated. No further action necessary.
    b. Isolator row detail on C30-04 pipe size has been increased to 24", and the applicant has confirmed that a 12" or greater pipe is large enough facilitate maintenance/cleaning access to the isolator row. No further action necessary.
    c. Locations and details of granite headstone curb and gutterline "dishpan" grading at catch basins has been provided. Applicant has confirmed that headstones will only be provided in the Right-Of-Way. No further action is necessary.

5) Additional Utility Infrastructure:
    a. Electrical and Communications Infrastructure
        i. Electrical and Communications manholes, pull boxes, and duct banks are proposed. Utility duct bank details have now been provided with a level of information confirming conduit counts, minimum cover requirements, and generic information. No further action necessary.
        ii. The applicant has confirmed that the only transformer being removed is being completed by utility companies prior to the project. No further action necessary.
    b. The applicant has provided additional information regarding sewer details on Sheet C11-01 and Sheet C30-03. No further action necessary.
    c. The applicant has indicated that capacity to serve letters from utilities will be provided as they become available. This may be considered a condition of approval for the project.
        i. The Capacity to Serve process will require a level of coordination between the applicant and utility companies and typically includes compliance with applicable utility standards and details. Central Maine Power and Consolidated Communications should review the plan and verify the depiction of changes to primary electrical and communication lines, respectively.
        ii. Minor modifications to utility layout and design from the capacity to serve process are anticipated, and shall be submitted to the City prior to construction.
            1. The Applicant shall coordinate with the City should the utility layout plan include additional transformer units, pole relocations, or impacts to water or sewer infrastructure.

Portland Maine | Yes. Google's good here.

Helen Donaldson <hcd@portlandmaine.gov>

MMC Drawings

Michael Guethle <michael.guethle@wright-pierce.com> Thu, Dec 13, 2018 at 4:56 PM
To: Helen Donaldson <hcd@portlandmaine.gov>
Cc: "Ryan T. Wingard" <ryan.wingard@wright-pierce.com>

Hi Nell,

My notes for the updated plans are as follows, and includes information on other utilities in the ROW as discussed today:

-Sheet C-11: CB 13370 (NE Corner) and CB 12640 (SW corner) are existing basins that are located in proposed crosswalks. If these structures have eccentric cones, rotate them so they are outside of the crosswalk.

-General: Structures in ROW are proposed to have eccentric cones. A note should be added to the construction plans indicating that covers and frames should be rotated to be outside of wheel travel lane locations.

-Sheet C-11: SD-16 callout is obstructed or missing, and should be included on the construction plans.

-Sheet C-11: Existing Storm Drain Structure Data table shall be updated to include inlet from Pipe SD-13

-Sheet C-11: Existing CB 13395 rim/frame/cover should be reviewed: Other CBs located in sidewalks are being raised and converted to Drainage Manholes (DMHs). Applicant shall confirm if this structure is to remain a CB or a DMH.

-Sheet C-11: There appear to be conflicts at the existing storm drain and proposed tree wells. Applicant shall provide solution to minimize future root intrusion from trees, or relocate storm drain.

-Sheet C-11: There appear to be conflicts with underground utilities at several structures and pipes. Applicant shall provide additional information for location of proposed utilities at the following pipes and structures:

Storm Drain 9

Sanitary Sewer 9

Catch Basin 7

Catch Basin 10

[Quoted text hidden]

Portland Maine Yes. Google's good here.

Helen Donaldson <hcd@portlandmaine.gov>

MMC Congress Street Building

Robert Thompson <rmt@portlandmaine.gov> Thu, Dec 13, 2018 at 9:01 AM
To: Helen Donaldson <hcd@portlandmaine.gov>

Hi Nell,

The Fire Department is satisfied with the latest site plan with the proposed islands removed. I've reviewed all responses from MMC, and their contractors, and we have no additional concerns with this project, based the latest plans submitted.

Please let me know if any additional changes are proposed.

Thank you,
Mike

On Wed, Dec 12, 2018 at 2:53 PM Helen Donaldson <hcd@portlandmaine.gov> wrote:

> Thanks, Mike. Let me know if you have any further comments or if you're fine with everything as is.
>
> Nell
>
> On Wed, Dec 12, 2018 at 12:44 PM Robert Thompson <rmt@portlandmaine.gov> wrote:
>
> > Hi Nell,
> >
> > I'm just confirming the new building on Congress Street will be addressed as 900 Congress Street.
> >
> > Thanks,
> > Mike
> >
> > --
> > Robert M. Thompson
> > Division Fire Chief
> > Portland Fire Department
> > (207) 874-8400
> > rmt@portlandmaine.gov
>
> --
> Nell Donaldson
> City of Portland Planning Division
> (207) 874-8723
> hcd@portlandmaine.gov

--
Robert M. Thompson
Division Fire Chief
Portland Fire Department
(207) 874-8400
rmt@portlandmaine.gov

Memorandum

Maine Medical Center

To:	Members of the City of Portland Planning Board
From:	Jeff Sanders, Chief Operating Officer, MMC
Date:	September 25, 2018
Re:	Site Plan Application: Congress St Patient Care Building

Maine Medical Center is pleased to submit this Level III Site Plan Application for the Congress St Patient Care building. This is the last of three site plan applications related to MMC's Short-Term Development plan outlined in the Institutional Development Plan approved by the Planning Board on September 26, 2017.

INTRODUCTION

This is the third and final site plan submission in MMC's short-term expansion and modernization plan. It completes the project's overall mission of improving the experience of patients, staff and visitors to the hospital; developing MMC's presence on the urban edge of the campus and providing convenient, safe and predictable parking for staff and the community.

The site plan includes the removal of the Gilman Street garage, MMC's staff parking facility that has reached the end of its useful life. MMC will expand into that space with a building featuring 64 modern, private patient rooms and 19 procedure rooms. Re-orienting the campus toward Congress Street will help ongoing efforts to revitalize this important gateway to the city, furthering the goals of the community and the city of Portland's Comprehensive Plan.

MMC has worked closely with city staff, neighbors, and local businesses to make improvements in accessing the Bramhall campus while reducing traffic and parking challenges on neighboring streets. Work has been undertaken to design the Congress Street entrance in order to allow easy and convenient access to MMC while minimizing impact on existing pedestrian, bicycle, transit and vehicular traffic.

This 265,000-square-foot addition allows MMC to internally reorganize cardiac services within the hospital campus, which means timely, efficient access for patients and care teams and reduction of time and effort spent traveling through the hospital corridors. The 19 procedure rooms will align with industry best practices, providing adequate space to treat patients, ultimately improving the experience at MMC.

PROJECT PURPOSE AND NEED

The entire MMC campus has grown in both size and complexity since it was built as Maine General Hospital in 1874. The growth has brought changes in both programmatic and infrastructure needs as it continues to serve patients and their families throughout the entire State of Maine and Northern New England. During the master facility planning process, MMC identified four key categories of need:

- Clinical
- Building
- Campus Reorganization
- Parking

The Congress St Patient Care building represents a significant step towards modernizing the facilities at Maine Medical Center. Over 50% of MMC's Bramhall campus is over 40 years old and 25% is 30 years old. The oldest part of campus, the East Wing of the Maine General Building, was built in 1874. The patient acuity at MMC is the highest in the State of Maine. MMC had an average Case Mix Index of 1.99 in 2017 while the average in the state was 1.23. Patient acuity and Case Mix Index are representations of how sick patients are at the hospital. Patients at MMC require advanced equipment, skilled care teams, and, most of all, private rooms to better facilitate their care and recovery.

The majority of MMC inpatient services are currently compressed into semi-private inpatient rooms. This creates a daily capacity challenge at MMC to manage the growing demand. The challenge is exacerbated by the need to close up to 60 beds per day due to patient condition, gender cohorting, maintenance, or staffing. The primary objective of the Congress St Patient Care building is to increase the number of private rooms and procedure rooms to better enable patient care.

Less than half of MMC's inpatient rooms are private today. MMC's private room ratio will be almost 80% once the expansion of the East Tower and construction of the Congress building is complete. The license bed count of 637 will remain the same. Significantly increasing the number of private rooms at MMC will improve the operational efficiency and patient and care giver experience.

CONSTRUCTION MANAGEMENT APPROACH

Turner Construction is the construction manager for this project. Turner's success working in and around highly complex environments will directly contribute to the success and safety of this project.

The purpose of the construction management plan (CMP) submitted with this application is to provide the details of the second phase of construction for MMC's Master Facility Phase IIB. The CMP outlines Turner Construction's plan for controlling impacts from noise, vibrations, ground movement, truck traffic, and other construction related factors to the surrounding neighborhoods and buildings.

Maintaining normal campus operations, mitigating impacts to surrounding residences and businesses and maintaining public safety are high priorities during the construction phase. The CMP will be presented to the appropriate City and Neighborhood representatives. The City of Portland Planning Board will approve the final plan. It has been the goal of these programs to define the construction plan before construction begins. Turner's experience on projects with similar logistic constraints has proven that pre-planning and constant communication are necessary for a smooth efficiently run, incident free project.

It is Turner Construction's full intent to follow the guidelines set by the CMP.

Turner Construction and its subcontractors shall schedule and conduct operations in a manner that will control the disturbance to the public in areas adjacent to the work and to occupants of buildings in the vicinity.

DESIGN APPROACH

The campus transformation of Maine Medical Center (MMC) draws its inspiration from its site, programmatic needs and most importantly, the desire to create a sense of place. Specifically, the Hospital will reflect its location within Portland and of Maine. Within this framework, the Hospital aims to preserve the historic character of the existing campus yet provide the opportunity for new identities to develop that represent the modern delivery of healthcare and the future of MMC.

MMC followed the Design Guidelines set in MMC's Institutional Development Plan (Pgs. 116-118). Other key design drivers and interventions envisioned for the MMC project balance the clinical needs of the hospital with the campus' place within the City of Portland. Included is a primary effort to improve the built environment of MMC's campus relationship with its urban context. This is achieved by focusing the new entrance towards Congress St to create an improved presence on the urban edge of the campus. This design improves the visitor and patient experience from arrival to the City all the way to entering the MMC buildings themselves. Providing a new entry on Congress St connects a campus entry directly to the existing and expanded visitor parking garage, simplifying the drop-off and parking sequence. This move creates a clear arrival sequence from drop-off, to parking, to movement through the MMC campus.

The inclusion of a new entry coupled with clear primary circulation along the ground level connects major interior programmatic functions with the site, further reinforcing the wayfinding and activating the building interior and exterior. Engaging Congress St with a sensitivity to human scale and experience will be the focus of the transition between exterior to interior including transitions from urban to natural environments. This approach extends to vertical connections, both physical and visual, to mitigate the large grade changes that exist on campus and with the surrounding sites. These interventions will provide a positive patient and visitor experience as well as enhance the neighborhood.

The creation of healing environments is an essential element to the design within the IOZ boundary. This will be achieved through the incorporation of access to and views of nature and natural daylight, which are proven to improve positive patient outcomes within a healthcare environment. Proper location and use of glass and transparency provides connections to the exterior to improve patient, visitor and staff experience but also to further reinforce wayfinding, and activate and energize the streetscape.

CONCLUSION

We are excited about this project and the enhancements it will provide our patients, visitors and care teams. This project will improve MMC's ability to meet the needs of patients in our community by de-coupling semi-private rooms and providing adequate parking for patients and families. We look forward to reviewing the Site Plan Application for the Congress St patient care building with you.

WRITTEN SUBMISSION 26 – AVAILABILITY AND ADEQUACY OF PUBLIC UTILITIES
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

ATTACHED ARE AN ABILITY TO SERVE CONFIRMATION FROM CENTRAL MAINE POWER REGARDING ELECTRICAL SERVICE, AND AN EMAIL TO PORTLAND WATER DISTRICT REQUESTING AN ABILITY TO SERVE CONFIRMATION. THE RESPONSE FROM PORTLAND WATER DISTRICT WILL BE SUBMITTED UPON RECEIPT.

REGARDING SOLID WASTE MANAGEMENT, THE APPLICANT HAS A CONTRACT WITH TROIANO WASTE MANAGEMENT WHO WILL CONTINUE TO PROVIDE THIS SERVICE FOR THE CONGRESS STRET BUILDING.

From:	Cough, Jamie
To:	Troidl, Adam
Subject:	CMP Three Phase Ability to Serve Request and Three Phase Service Process
Date:	Monday, September 24, 2018 8:12:00 AM
Attachments:	Easement Information Worksheet.doc Standard Easement Sample.pdf 2July 2018 EDET.XLSX

9/24/18

Adam Troidl, LEED AP
Vice President | Development & Consulting Services
Colliers International

Sent via email to: adam.troidl@colliers.com

RE: CMP Ability to Serve Letter for Maine Medical Center Expansion

Project Description: Maine Medical Center 263,000 sf clinical building at the corner of Congress & Gilman. This will be a redevelopment of an existing 1,200 car +/- parking garage site on the existing primary metered campus on Congress Street.

Dear Mr. Troidl:

CMP has the ability to serve the proposed project in accordance with our CMP Handbook (web link below). We can provide you the desired pad or pole mounted transformers per your request and city approval, in accordance with our CMP Standards Handbook. If you have any questions on the process, or need help in completion of the documents, **please contact me at 207-629-1489.**

Here is our typical process for getting your three phase or CT rated single phase service installed. If you have any questions, please let me know. The underlined links will redirect you to the appropriate site for additional information.

Service Milestones for Three Phase Services and CT Rated Single Phase Services. Please refer to CMP Installation Checklists for other installations.

- Call 1-800-S6S-3181 to establish a new account (if needed) and an SAP work order. Please provide both of these to me.
- Submit Load information. Please complete the attached EDET (excel file) using load information. . Please complete this and email back to me.
- Submit the easement information worksheet. Please complete this form and either email or fax back to me.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections if you have them.

- Preliminary meetings with CMP Advisor and Engineer to determine details of job (I will need to schedule with your electrician/contractor-please let me know who this is)
- Field planner design appointment to cost out job and develop CMP invoice. The invoice is typically generated 5-6 weeks after the design appointment. This expires after 90 days from the invoice date.
- CMP submits invoice to the customer for payment (typically via email). Payment received from customer.
- Easements (based on easement information worksheet) sent out, signed and originals returned to CMP.
- Job scheduled for completion after the electrical inspection has been received.

This process can take several months, depending upon several factors including transformer or materials delivery, return of completed paperwork, and other jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

Please complete the attached forms (the specific instructions are on each form) and email them back to me at your earliest convenience.

For your convenience, here is a link to the CMP Website which contains our Handbook with details on most service requirements: CMP Handbook of Standard Requirements

You will be responsible for installing the customer connections, conduits, and metering in accordance with the CMP Handbook of Standard Requirements. The transformer will be sized based on your submitted load sheets.

Your deposit amount will be typically based on an estimated two month bill, calculated from your completed load sheet unless otherwise determined by CMP.

Metering:

All metering (including locations) must be preapproved by CMP.

Chapter 324 Interconnections:

Please be advised that if you plan to install solar/wind/hydro generation, you must complete an application under the MPUC mandated Chapter 324 Interconnection Standards. If you go to Chapter 324 Interconnection Standards and follow the instructions for the Small Generator Interconnection Procedures, CMP can do this work in parallel to your service request that will be handled by me. If you project is under 660 KW You will be able to have a Customer Net Energy Billing contract. Information concerning Customer Net Energy Billing can be accessed thru the Chapter 324 website or by clicking here: Net Energy Billing

Reallocation/Line Extensions:

Recently, changes were made to the three-phase construction policy, which require CMP to reallocate construction costs paid by customers. If applicable, those projects identified as "developments" do not qualify for reallocation of funds. Please see this document at our website for details about the reallocation conditions. Any reallocation charges will be specifically denoted on your invoice. The website address for this is: PolyphaseLineExtension .

This line extension will be part of Central Maine Power's distribution system. In the event the property served under this Agreement is sold or otherwise conveyed, all rights and obligations of the Agreement shall stay with the property. Please note that if you rent or lease this property to another and you want to receive the reimbursement payments, you must make special arrangements with the Central Maine Power Company. Otherwise, any reimbursement payments will be sent to the "Customer" taking service at the service location.

Electricity Supplier Information:

Central Maine Power Company (CMP) will provide your facility with electric delivery service. If you don't already have a provider, you will need to make arrangements with a competitive electricity provider in order to receive electricity supply for your facility. In the event you fail to choose a competitive electricity provider, you will receive Standard Offer service arranged by the Maine Public Utilities Commission. If you wish to be served by a competitive electricity provider immediately upon establishment of delivery service, you must arrange for this service directly through your chosen competitive electricity provider, who must enroll your account no later than 5 PM on the business day prior initiation of delivery service by CMP. An up-to-date list of competitive suppliers can be found at the:

1) Maine Public Utilities Commission (MPUC) web site- **Maine PUC**
2) By calling the MPUC at (207) 287-3831

Attachments:

Excel Load Sheet (EDET)
Easement Worksheet and Sample Standard Easement

Regards,

Jamie

Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road

Portland, ME 04103
207-842-2367 office



CENTRAL MAINE
POWER

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Will Conway

From: Dylan Stuart
Sent: Monday, September 24, 2018 11:22 AM
To: rbartels@pwd.org
Cc: Will Conway; 15466
Subject: Maine Medical Center Ability to Serve Request
Attachments: 15466U2-U-CONGRESS.pdf

Robert,

I am writing to request an ability to serve letter for the Maine Medical Center Expansion project following our meeting from last week. We have updated the locations for the domestic and fire services coming from Gilman and Congress Street. Please see the attached Utility plan as well as the most updated Peak Flow Based on Fixture Count form that was filled out by our MEP engineer.
Please let me know if you have any questions or require any additional information.

Thank you,

Dylan Stuart *Civil Engineer*
Office: 207.200.2100 | Direct: 207.200.2093
75 John Roberts Rd., Suite 4A, South Portland, ME 04106
dstuart@sebagotechnics.com | www.sebagotechnics.com
An Employee-Owned Company

SEBAGO
TECHNICS

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Peak Flow Based on Fixture Count

Customer	Maine Medical Center
Street Address	22 Bramhall Street
City	Portland

Fixture		Fixture Value 60 psi		No. of Fixtures		Fixture Value
Bathtub		8	x	0	=	0
Bedpan Washers		10	x	5	=	50
Bidet		2	x	0	=	0
Dental Unit		2	x	0	=	0
Drinking Fountain - Public		2	x	0	=	0
Kitchen Sink		2.2	x	95	=	209
Lavatory		1.5	x	141	=	211.5
Showerhead (Shower Only)		2.5	x	100	=	250
Service Sink		4	x	10	=	40
Toilet	-Flush Valve	35	x	142	=	4970
	-Tank Type	4	x	0	=	0
Urinal	-Pedestal Flush Valve	35	x	0	=	0
	-Wall Flush Valve	16	x	17	=	272
Wash Sink (Each Set of Faucets)		4	x	8	=	32
Dishwasher		2	x	0	=	0
Washing Machine		6	x	0	=	0
Hose (50 ft. Wash Down)	-1/2 in.	5	x	0	=	0
	-5/8 in.	9	x	0	=	0
	-3/4 in.	12	x	0	=	0

Combined Fixture Value Total: 6034.5

Customer Peak Demand From Fig. 4-2 or 4-3	175
Pressure Factor From Table 4-1	1.17

No. of Irrigation Sections (Areas of 100 sq. ft.)	0
Irrigation Factor (1.16-Spray Systems, 0.40-Rotary Systems)	

Hose Bibs for Irrigation:

Size	Fixture Value	No. of Fixtures
1/2"		
5/8"		
3/4"		

Total Fixed Demand (Peak Flow) **204.75** gpm

Table 4-1 Pressure Adjustment Factors

Working Pressure at Meter Discharge (psi)	Pressure Adjustment Factor
35	0.74
40	0.80
50	0.90
60	1.00
70	1.09
80	1.17
90	1.25
100	1.34

Adapted from AWWA Manual M22 table 4-1

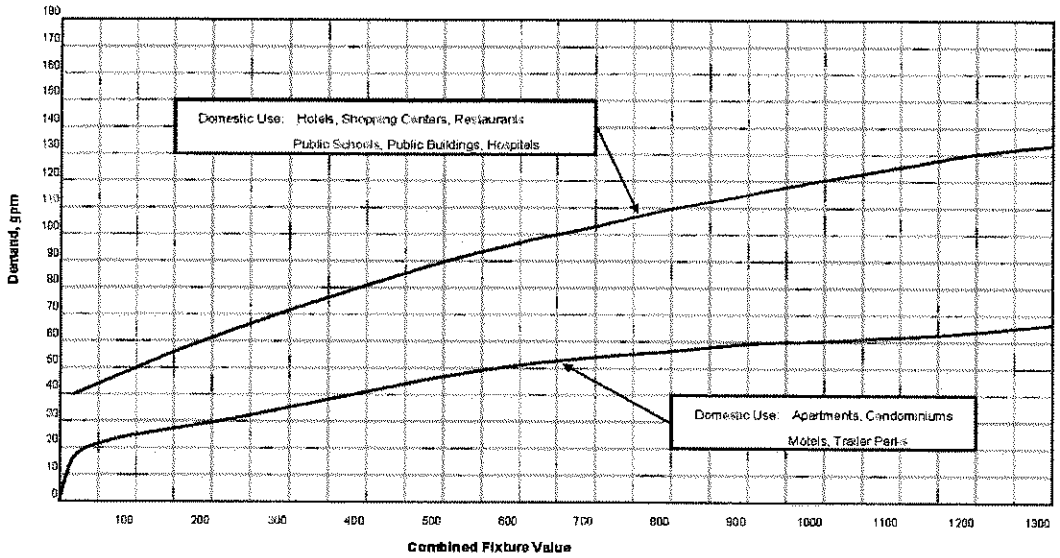

Figure 4-2 Water flow demand per fixture value - low range

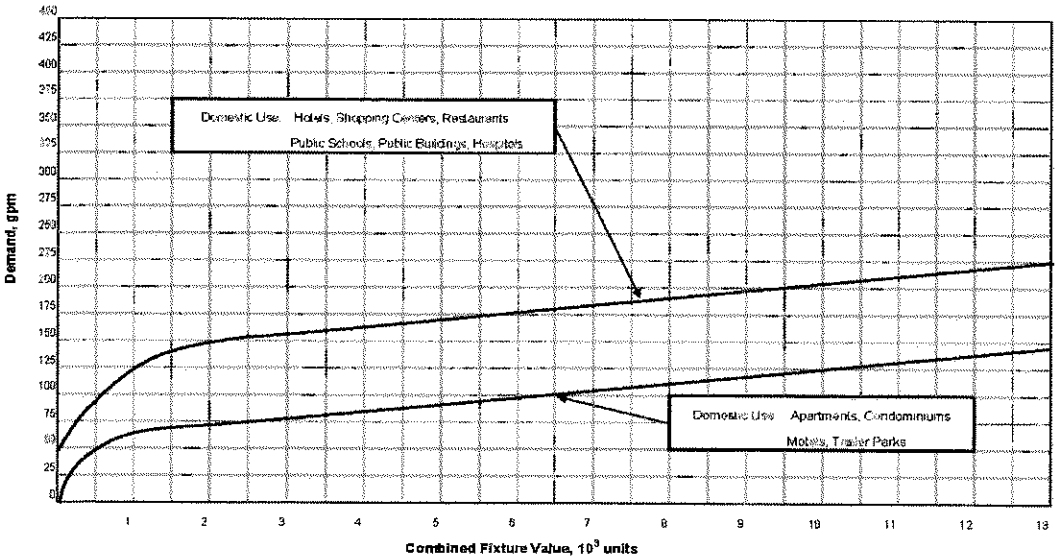

Figure 4-3 Water flow demand per fixture value - High range

Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

November 29, 2018

Dylan Stuart
75 John Roberts Rd., Suite 4A
South Portland, ME 04106

Re: 22 Bramhall Street, PO
Ability to Serve with PWD Water

Dear Mr. Stuart:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on September 24, 2018. Based on the information provided per plans dated November 29, 2018, we can confirm that the District will be able to serve the proposed project as further described in this letter. **Please note that this letter constitutes approval of the water system as currently designed. Any changes affecting the approved water system will require further review and approval by PWD.**

Conditions of Service

The following conditions of service apply:

- A new 8-inch fire service and 4-inch domestic water service may be installed from the water main in Congress Street. The service(s) should enter through the properties frontage on Congress Street at least 10-feet from any side property lines. The service(s) are approved based on connection to a renewed water main in Congress Street that is of sufficient size to supply water to the site. The existing 6" CI water main in Congress Street is insufficient to provide water to the site.
- A new 8-inch fire service and 4-inch domestic water service may be installed from the water main in Gilman Street. The service(s) should enter through the properties frontage on Gilman at least 10-feet from any side property lines.
- The existing site is currently served with a 1-inch domestic water service and a 6-inch fire service; the size of these services is undersized for the proposed use. These service must be retired per PWD standards, which includes shutting the corporation valve and cutting the pipe from the water main for the 1-inch service, and removing the valve and capping the tee for the 6-inch service.
- An approved backflow prevention device must be installed on the service line directly after the meter prior to service activation. Please refer to the PWD website for more information on cross-connection control policies.
- The Portland Water District does not have record of any other existing infrastructure in public roads and recommends a survey and test pitting be performed by the development team prior to construction. Any conflicts that arise during construction are at the risk of the developer and may result in job shutdown until new plans are submitted by the developer and reviewed and approved by PWD.

Prior to construction, the owner or contractor will need to make an appointment to complete a service application form and pay all necessary fees. The appointment shall be requested through MEANS@pwd.org or by calling 207-774-5961 ext. 3199. Please allow (3) business days to process the service application paperwork. PWD will guide the applicant through the new development process during the appointment.

Existing Site Service

According to District records, the project site does currently have existing water service. A 1-inch diameter domestic service line and 6-inch diameter fire service line provide water service to the site. Please refer to the "Conditions of Service" section of this letter for requirements related to the use of these services.

Water System Characteristics

According to District records, there is an 6-inch diameter CI water main in Congress Street, an 8-inch diameter DI water main in Gilman Street, and a public fire hydrant located approximately 50 feet from the site. Recent flow data is not available in this area. The most recent static pressure reading was 88 psi.

Public Fire Protection

The installation of new public hydrants to be accepted into the District water system will most likely not be required. It is your responsibility to contact the City of Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

Private Fire Protection Water Needs

You have indicated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact MEANS to request a hydrant flow test and we will work with you to get more complete data.

Should you disagree with this determination, you may request a review by the District's Internal Review Team. Your request for review must be in writing and state the reason for your disagreement with the determination. The request must be sent to MEANS@PWD.org or mailed to 225 Douglass Street, Portland Maine, 04104 c/o MEANS. The Internal Review Team will undertake review as requested within 2 weeks of receipt of a request for review.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District



Robert A. Bartels, P.E.
Senior Project Engineer

B

Portland, Maine — Yes. Life's good here.

Planning & Urban Development Department

Bramhall St. - 22, MMC Congress Street Building

LEVEL II and LEVEL III APPLICATION SUBMISSION CHECKLIST

Please submit each document as a separate PDF file.
Please confirm by electronically checking the boxes to the left

General Application Documents

#	Checklist	Items to be Provided
00	Yes ✓ NA Plan	PROJECT DESCRIPTION • Cover Letter with detailed project description
01	Yes ✓ NA Plan	COMPLETED CHECKLIST – LEVEL III APPLICATION
02	Yes ✓ NA Plan	RIGHT, TITLE AND INTEREST • Deeds, leases, or purchase and sales agreements
03	Yes ✓ NA Plan	EVIDENCE OF STATE OR FEDERAL APPROVALS, if applicable • Permits or letters of non-jurisdiction, if applicable
04	Yes ✓ NA Plan	ZONING ASSESSMENT • Table listing required and proposed uses and dimensional standards Zoning Assessment Table
05	Yes ✓ NA Plan	EXISTING &/OR PROPOSED EASEMENTS OR COVENANTS, if applicable • Evidence of existing easements and any proposed easements
06	Yes ✓ NA Plan	WAIVER REQUESTS • Written request for waiver describing request and reason. Waiver Table
07	Yes ✓ NA Plan	FINANCIAL CAPABILITY • Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
08	Yes ✓ NA Plan	TECHNICAL CAPABILITY • Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

LEVEL II AND LEVEL III SITE PLAN STANDARDS AND SUBMISSION CHECKLIST

Provide assessment of compliance with standards and include supplemental documentation, as applicable.
Please submit each document as a separate PDF file.

TRANSPORTATION

	Check list	Assess/Provide/Document:
09	Yes ✓ NA Plan	**Transportation Analysis- Traffic Impact (14-526 (a) 1)** • Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts • Traffic Impact Study (Technical Manual, Section 1) if applicable
10	Yes ✓ NA Plan	**Access and Circulation (14-526 (a) 2 a)** • Access and internal circulation, addressing ADA access • Access and egress impacts on traffic flows • Description and use of drive-up features, if applicable
11	Yes ✓ NA Plan	**Loading and Servicing (14-526 (a) 2 b)** • Loading and servicing needs, route and travel way geometrics for deliveries • Turning templates for delivery vehicles, if applicable
12	Yes ✓ NA Plan	**Sidewalks (14-526 (a) 2 c)** • Sidewalks and condition along street frontages and internal walkways • Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)
13	Yes ✓ NA Plan	**Public Transit (14-526 (a) 3), if applicable** • Existing available transit services • Proposed site plan design details, such as easement, pad base, and shelter
14	Yes ✓ NA Plan	**Off-Street Parking: Vehicle & Motorcycle/Scooter) (14-526 (a) 4 a and c)** • Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements • Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan
15	Yes ✓ NA Plan	**Bicycle Parking (14-526 (a) 4 b)** • Address bicycle parking requirements and identify locations on-site • Construction details for bike racks (Technical Manual, Section 1)
16	Yes ✓ NA Plan	**Snow Storage (14-526 (a) 4 d)** • Management plan for snow removal and locate snow storage areas on plan
17	Yes ✓ NA Plan	**Traffic Demand Management (TDM) (14-526 (a) 5), if applicable** • Develop TDM with Trip Reduction Targets and Strategies

ENVIRONMENTAL AND LANDSCAPE FEATURES

Check list	Assess/Provide/Document:
18 Yes ✓ NA Plan	**Preservation of Significant Natural Features (14-526 (b) 1), if applicable** • Trees, plants, habitats listed on State or Federal list of endangered or threatened • High and moderate value waterfowl and wading habitat • Aquifers on Casco Bay Islands • Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) • Proposed preservation areas and protection measures • Documentation from environmental consultants, determinations from applicable state agencies
19 Yes ✓ NA Plan	**Landscaping and Landscape Preservation (14-526 (b) 2 a)** • Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4) • Protection measures of existing vegetation during construction • Protection measures within Shoreland Zone, if applicable
20 Yes ✓ NA Plan	**Site Landscaping (14-526 (b) 2 b)** • Screening and buffering of service areas and between non-residential and residential uses • Planting plans with plant schedule and sizes (Technical Manual, Section 4)
21 Yes ✓ NA Plan	**Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable** • Landscaped islands within parking areas (Technical Manual, Section 4)
22 Yes ✓ NA Plan	**Street Trees (14-526 (b) 2 b iii)** • Existing Heritage or Feature Trees on site and measures to preserve • Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable

ENVIRONMENTAL AND STORMWATER

Check list	Assess/Provide/Document:
23 Yes ✓ NA Plan	**Water Quality, Stormwater Management and Erosion Control (14-526 (b) 3 a)** • Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable • Erosion control plan and measures • Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable • Subsurface sanitary sewage disposal and groundwater protection

PUBLIC INFRASTRUCTURE AND SAFETY

Check list	Assess/Provide/Document:
24 Yes ✓ NA Plan	**Consistency with City Master Plans (14-526 (c) 1)** • Identify consistency with master plans • Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
25 Yes ✓ NA Plan	**Public Safety and Fire Prevention (14-526 (c))** • Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3) • Emergency vehicle access • Address consistency with public safety standards (Technical Manual, Section 3) • Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist
26 Yes ✓ NA Plan	**Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual,** Sections 2 & 9) • Electrical services, including providing underground services • Identify existing and proposed connections for public utilities and required public utility upgrades • Sewer line connections are required, if there is a main within 200 feet • Proposed solid waste management facilities on-site and management for the site • Written evidence of the ability to serve from utility companies, as applicable

SITE DESIGN

Check list	Assess/Provide/Document:
27 Yes ✓ NA Plan	**Massing, Ventilations and Wind Impact (14-526 (d) 1)** • Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable • Bulk, location or height impacts on adjoining structures • Identify and locate HVAC equipment and venting away from public spaces and residential properties • Identify screening and manufacturing specifications for noise, if applicable
28 Yes ✓ NA Plan	**Shadows (14-526 (d) 2), if applicable** • Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
29 Yes ✓ NA Plan	**Snow and Ice Loading (14-526 (d) 3)** • Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways
30 Yes ✓ NA Plan	**View Corridors (14-526 (d) 4), if applicable** • Protection of designated view corridors (Portland Design Manual, Appendix 1)

31	Yes ✓ NA Plan	**Historic Resources (14-526 (d) 5), if applicable** • Identify developments within Historic Districts or affecting Designated Landmarks • Certificate of Appropriateness or other evidence • Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required • Address preservation and documentation of Archaeological Resources
32	Yes ✓ NA Plan	**Exterior Lighting (14-526 (d) 6)** • Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12) • Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)
33	Yes ✓ NA Plan	**Noise and Vibration (14-526 (d) 7)** • Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements
34	Yes ✓ NA Plan	**Signage and Wayfinding (14-526 (d) 8), if applicable** • Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff • Proposed commercial and directional signage on site
35	Yes ✓ NA Plan	**Zone Related Design Standards (14-526 (d) 5)** • Address Historic Preservation Design Review, if applicable • Address any applicable design review standards by zone • Address submission requirements from Design Manual, page 1, addressing neighborhood context • Description of exterior materials, color, finish, and samples
36	**Construction Management Plan**	
	Check list	
	Yes ✓ NA Plan	Construction Management Plan • Construction Management Document and Plan

Level II and Level III Site Plan Checklist

Please upload the following drawings with the listed details into e-Plan as separate pdfs.

☑ **RECENT BOUNDARY SURVEY** (stamped by Maine Licensed Surveyor)

Must be in compliance with Technical Manual, Section 13

SITE PLAN(s) (stamped by Maine Licensed Engineer) including:

☑ **Existing Conditions**

- Approximate location of structures on abutting property
- Topography
- Locate water courses
- Delineate wetlands
- Zone lines

☑ Proposed Site Plan

- Ground floor area, and grade elevations for all buildings

☑ **Access, Circulation, and Parking**

- Streets and intersections adjacent to site , any proposed geometric modifications
- Location, dimensions and materials of all existing and proposed driveways, vehicle, bicycle, & pedestrian access ways with corresponding curb lines
- Engineered specifications/ cross-sections for proposed driveways, sidewalks & paved areas
- Location and dimensions of proposed loading areas
- Existing and proposed transit infrastructure with dimensions/ engineering specifications
- Location of vehicle and bicycle parking with dimensions and engineering specifications

☑ **Site Considerations**

- Identify snow storage areas
- Location of fire hydrants
- Location of solid waste management facilities

☑ **UTILITY PLAN** including:

- Existing utilities on site and within public streets
- Location, sizing, and directional flows of all existing and proposed utilities
- Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- Electric utility infrastructure

☑ **GRADING and DRAINAGE PLAN** including:

- Existing grades and drainage
- Proposed grades
- Proposed stormwater management meeting Technical Manual (Section 5) standards
- Location and proposed alteration of a water course
- Preservation or alteration of wetlands

☑ **EROSION CONTROL**

- Must be in compliance with Technical Manual, Section 5

☑ **LANDSCAPE PLAN** including:

- Existing vegetation to be preserved and preservation measures
- Proposed landscaping and buffers
- Planting schedule

☐ **RECORDING PLAT**, if applicable N/A

- IF SUBDIVISION: Must be in compliance with requirements of Section 14-496 (b)

☑ **ARCHITECTURAL PLANS & RENDERINGS** including:

- Exterior building elevations, color renderings, illustrations of all sides
- Location and dimensions of all existing & proposed HVAC & mechanical equipment, all proposed screening
- Provide context drawings, if applicable (Design Manual, page 1)
- Floor plans

WRITTEN SUBMISSION 27 – MASSING, VENTILATIONS AND WIND IMPACT
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THE PROPOSED BUILDING CONFORMS TO TNE MASSING OF THE CAMPUS AS SET FORTH IN THE IDP. THE TALLER SECTION OF THE CONGRESS STREET BUILDINABUTS THE TALL ELEVATOR/ STAIR TOWER PORTION OF THER VISITOR GARAGE, WHILE THE REMAINDER OF THE BUILDING STEPS DOWN TOWARD THE EDGE OF THE CAMPUS.

IN ADDITION TO THE VISUAL EFFECT OF THIS MASSING, THE BUILDING WILL NOT CREATE ANY ADVERSE EFFECTS FROM WIND PATTERNS.

THE MAJORITY OF THE HVAC EQUIPMENT WILL BE WITHIN THE BASEMENT LEVEL OF THE BUILDING, HOWEVER , THERE WILL BE LIMITED HVAC UNITYS ON THE ROOF OF THE TALL SECTION OF THE BUILDING

C

WRITTEN SUBMISSION 02 – RIGHT, TITLE AND INTEREST
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THE PROPERTY DEEDS ARE ATTACHED.

Know all Men by these Presents, That

I William H. Bailey of Portland in the State of Maine

in consideration of the sum of Two Hundred and fifty Dollars paid by

The Maine General Hospital, a Corporation established by law at Portland

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital

heirs and assigns forever,

Bailey to Maine General Hospital

U. S. I. R. 50 Cents W. H. B. June 6. 1870.

a certain lot of land situated on the northwestern slope of Bramhall's Hill in Portland, the same being lot numbered nine, on a plan made by Howe and Ogood September 1863 recorded in the Cumberland Registry of Deeds in Plan Book number two page 36. The said plan is of a tract of land extending from the rear of the State Arsenal lot to Congress street. The lot hereby conveyed is about forty feet in breadth and about sixty feet in length on the Southwest side of an unopened street laid down on said plan; the same conveyed to me by Moody F. Walker Oct. 14. 1863. Subject to the location of Ash street over any part of said lot, subject also to a mortgage for $37.50 given to Moody F. Walker which mortgage with all unpaid interest thereon, the present grantee is to assume and discharge.

To Have and to Hold the aforegranted and bargained Premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital

~~heirs~~ and assigns, to their use and behoof forever. And I do covenant with the said Grantee

~~heirs~~ and assigns, that I am lawfully seized in fee of the Premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee

to hold as aforesaid; and that I will and my heirs, shall and will warrant and defend the same to the said Grantee

~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Grantor and Elvira W. my wife ~~of the said~~ in testimony of her relinquishment of her right of dower in the above described premises, have hereunto set our hands and seals this sixth day of June in the year of our Lord one thousand eight hundred and seventy.

~~Signed, Sealed and Delivered~~ in presence of

P. Barnes to W. H. B. — William H. Bailey Seal

Joseph S. Bailey to E. W. B. — Elvira W. Bailey Seal

State of Maine
Cumberland, ss. June 6th 1870. Personally appeared the above-named William H. Bailey and acknowledged the above instrument to be his free act and deed. Before me,

P. Barnes Justice of the Peace.

Received June 6. 1870, at 12 o'clock 54 m., P. M., and recorded according to the original.

Attest, Eben Leach Register.

Know all Men by these Presents, That

I, Hugh Carney of Portland in the State of Maine

in consideration of the sum of Five Hundred Dollars paid by The Maine General Hospital, a Corporation established by law at Portland aforesaid the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital ~~heirs and assigns forever,~~

Carney to Maine General Hospital

U. S. I. R. 50 Cents H. C. June 6. 70

a certain parcel of land situated on the North-western slope of Bramhall's hill in Portland, bounded on the East by the State Arsenal lot and on the North by land of the City; the same conveyed to me by Moody F. Walker Oct. 14. 1863, in two lots about forty feet in width by about sixty feet in length, which are numbered two and four on a plan of the same and adjoining lands made by Howe and Osgood Sept. 1863, which is recorded, under date of January 20, 1864 in Plan Book number two page 36 of the Cumberland Registry of Deeds. Subject to the location of Ash street over any part of said lots.

To Have and to Hold the aforegranted and bargained Premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital ~~heirs and~~ assigns, to their use and behoof forever. And I do covenant with the said Grantee ~~heirs and~~ assigns, that I am lawfully seized in fee of the Premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I will and my heirs, shall and will warrant and defend the same to the said Grantee ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Grantor and Bridgett D. my wife ~~of the said~~ in testimony of her relinquishment of her right of dower in the above described premises, have hereunto set our hands and seals this sixth day of June in the year of our Lord one thousand eight hundred and seventy.

Signed, Sealed and Delivered in presence of

P. Barnes to H. C. — Hugh his X mark Carney Seal.

Witnessed by Edward N. Bates — Bridget Carney Seal.

State of Maine
Cumberland, ss. June 6th 1870. Personally appeared the above-named Hugh Carney and acknowledged the above instrument to be his free act and deed. Before me,

P. Barnes Justice of the Peace.

Received June 6 1870, at 12 o'clock 54 m., P. M., and recorded according to the original.

Attest, Eben Leach Register.

State of Maine Cumberland ss Portland May 19th 1870.
Then personally appeared the abovenamed Sarah M. Bridges and acknowledged the foregoing instrument to be her free act and deed.
Before me, George R. Davis, Justice of the Peace

Received May 19 1870 at 5h 20 m P.M. and recorded according to the original
Attest. Ebem Leach Register

Agreement of Joseph S Bailey with Maine Hospital

Agreement made the 27th day of April 1870 by Joseph S Bailey of Portland for the conveyance of certain land to the Maine General Hospital

For a valuable consideration the said Bailey agrees to convey by deed of warranty to the Maine General Hospital, upon the conditions hereinafter named, a certain parcel of land situated on the slope of Bramhall's Hill in Portland, being the western part of a parcel of about two acres extending from the General ground to Congress street, formerly owned by Mr. F. Walker and others, described, as divided into lots on a plan made by Rowe and Osgood in 863, through which two acre parcel a street called Oak street has recently been laid out, and being all of said two acre parcel, except the ten lots nearest the General and except the part of the street adjoining the ten lots. The conveyance hereby agreed to be made is to include the fee of the land covered by the new street west of the ten lots, but subject to the location of the street.

This agreement is to be in force for the term of forty days from and after this date.

The conditions upon which the conveyance is to be made, are, that the Hospital shall within the said forty days pay to the said Bailey, or to his written order, the sum of two thousand dollars, upon which payment the deed is to be made and delivered, and shall therefore make and deliver to the said Bailey or to his written appointment, into two several negotiable promissory notes, one for two thousand dollars payable in two years from the date of the deed, and one for one thousand dollars payable in three years from the same date, both with interest half yearly at the rate of seven and one half per annum, with liberty to pay not less than one thousand dollars on said notes at any time before maturity, together with a mortgage of the premises to secure the same, and shall assume and pay according to its tenor a mortgage now subsisting

on a part of said premises for one thousand dollars given by said Bailey in 1866 in six years, subject to which mortgage this agreement is made, interest accrued on said mortgage to the date of this conveyance to be paid by said Bailey.

In witness whereof, the said Bailey has hereunto set his hand and seal the day and year first above written.

U. S. Inter. Revenue 5 cts. J. S. B. Apl. 27. 1870.	Witness P. Barnes	Joseph S. Bailey Seal

State of Maine Cumberland St. On this 21st day of May 1870 personally appeared Joseph S. Bailey and acknowledged the foregoing instrument by him subscribed to be his free act and deed.

Before me P. Barnes Justice of the Peace.

Received May 21, 1870 at 4h 10m P.M. and recorded according to the original

Attest: Eben Leach Register

U. S. I. R. $2.00 H. S. L. May 21 1870.	Know all men by these presents that I Horatio T. Libby of Portland in the County of Cumberland and State of Maine in consideration of Six Thousand Dollars paid by John Lindsey of Scandish in the County of Cumberland and State of Maine,	Libby to Lindsey

the receipt whereof is hereby acknowledged, do hereby give grant, bargain, sell and convey unto the said John Lindsey a certain lot of land and the buildings thereon situated on the Southwesterly side of Chestnut Street in said Portland and bounded beginning at the Northerly corner of land of Benjamin Tukey formerly Leonard Crosse's land and running thence Northwesterly on said street thirty five feet; thence Southwesterly at right angles with said street sixtynine feet to a stake or stones; thence Southeasterly on a line parallel with said street thirtyfive feet to a stake or stones; thence at right angles with the last line by Mrs. A. Hay's land and said Tukey's land sixtynine feet to the bound begun at containing about two thousand and four hundred feet, being a part of the land conveyed to me by Miriam Libby sale by deed dated January 18th 1854 and recorded in Cumberland Registry of Deeds Book 252 Page 27. Subject to a mortgage to the City of Portland on which is now due about two thousand dollars.

To have and to hold the above granted premises

Portland May 7th 1874.

This mortgage having been paid and fully satisfied, is hereby cancelled and discharged.

Witness

J. Wm. Lindsey

their hands and seals this twentieth day of October A.D. 1870.

Richard D. Rice {President of Maine Central Railroad Company

Countersigned by Joshua Nye, Treas. of Maine Central R.R. Co.

William L. Putnam Seal
Artemas Libbey Seal.
James T. Patten. Seal.

Cumberland ss. Oct. 20, 1870. Then personally appeared Richard D. Rice, President of the Maine Central Railroad Company and acknowledged the foregoing instrument to be the free act and deed of said Corporation, before me,

Josiah H. Drummond Justice of the Peace.

Received Nov. 2, 1870 at 2h. 30m. P.M. and recorded according to the original.

Attest: Eben Leach Registr

City of Portland to Me. Gen. Hospital

Whereas the City Council of this City of Portland, upon the petition of the Maine General Hospital, praying that the City would grant to the Corporation certain lands for the purpose of enlarging the building site of the Hospital, and rendering the same more commodious and useful for the objects thereof, by concurrent orders of the two Branches, passed by the same respectively, on the 13th and 14th days of May 1870 and approved by the Mayor on the 31st day of the same month, ordered, that the prayer of the petition be granted, and that a deed in furtherance thereof be executed and delivered for the conveyance prayed for.

Now, know all men by these presents that the City of Portland, in pursuance of the foregoing order, and in consideration of Ten Dollars paid by the Grantee hereinafter named, the receipt whereof is hereby acknowledged, doth hereby give, grant, bargain, sell and convey to the Maine General Hospital, a Corporation established by law at Portland aforesaid, a certain parcel of land, belonging to the City, situated on the slope of Bramhall's Hill, bounded on

the Northeast by a line, as now fenced, in continuation of the Northeast side line of the Maine State Arsenal lot, and on the Southwest by lands of Joseph S. Bailey and others, and extending Westward, between those lines, from the Arsenal lot to Congress street.

Also another parcel of land belonging to the City, situated on the Southwest side of the Arsenal lot and of the lands of Bailey and others, having a front on a line in continuation of the Northwest side line of Arsenal street as far as to the Northeast side line of a contemplated street, and extending Westwardly from Arsenal street between the contemplated street on the South and the Arsenal lot and Bailey land on the North to Congress street.

The said contemplated street is laid down and designated by the name of Gilman street on a Plan made by J. F. Chappell, Engineer, May 21, 1870, to which Plan, verified as required by the Order of the City Council, by the signature of the City Treasurer, reference is made for more exact ascertainment of the position and courses of said street.

This conveyance is made upon the condition that the lands hereby granted and conveyed shall be held for the purposes of the Hospital, as a part of its building site and grounds; and that whenever the same shall cease to be so used, they shall revert to the City.

Also upon the further condition, that if the Hospital shall acquire a title to the lands of Bailey and others above mentioned, and the contemplated street shall at any time, thereafter be laid out and opened across the same, as described in said Plan, no damages or compensation shall be claimed by the Hospital therefor.

To have and to hold the premises, with the privileges and appurtenances thereof, to the said Maine General Hospital, to its use and behoof forever, subject to the conditions aforesaid.

In witness whereof, these presents are subscribed and sealed, in behalf of the City, by Henry H. Hersey, City Treasurer, duly authorized by the Order aforesaid, this fourth day of June in the year of our Lord

one thousand eight hundred and seventy.

Signed, sealed, and delivered in presence of Benj. Kingsbury Jr. } Henry W. Hersey City Treasurer.



State of Maine.

Cumberland ss. On this sixth day of August 1870, personally appeared Henry W. Hersey and acknowledged the foregoing instrument by him subscribed to be the deed of the City of Portland.

Before me,

Benj. Kingsbury Jr. Justice of the Peace.

Received Nov 14, 1870 at 1 h. P.M. and recorded according to the original.

Attest: Elsen Sacich Register

P. & O. R. R. Co to Davis et al

U. S. I. R. $800.00 P. & O. R. R. Co By S. J. A. Dwt Nov. 1, 1870

Discharge Book 702 Page 65

Know all men by these presents, that the Portland and Ogdensburg Railroad Company, a Corporation established by the Legislature of the State of Maine, and authorized and empowered by the Legislature of New Hampshire to construct and extend its Railroad across said State of New Hampshire, subject to the laws thereof relating to Railroads, and having its principal office for the transaction of business at Portland in the County of Cumberland and State of Maine, for the purpose of effecting the several trusts and securities hereinafter set forth, created and declared, designed to enable and provide for the more speedy construction and equipment of the Railroad of said Company, and in consideration of One Dollar paid by the Grantees and Trustees hereinafter named, doth hereby give, grant, bargain, sell and convey to Woodbury Davis, Samuel E. Spring, and Weston F. Milliken, all of Portland aforesaid, Gentlemen, their survivors and successors as hereinafter designated, all that part of the Railroad of said Company extending and to be extended from the terminus in Portland, in the State of Maine to Bartlett in the State of New Hampshire, located and to be located within said limits, called the Portland and Ogdensburg Railroad, including all the rights of way and lands taken and

Know all Men by these Presents, That

I Phinehas Barnes of Portland, in the County of Cumberland, State of Maine

in consideration of Four Thousand and Seventy one 37/100 Dollars paid by

The Maine General Hospital, a Corporation established by the Laws of said State

the receipt whereof I do hereby acknowledge, do hereby remise, release, bargain, sell and convey, and forever quit claim unto the said Maine General Hospital, its successors

~~heirs~~ and assigns forever, all my right, title and interest in and to Twenty several lots of land

Barnes to Maine G. Hospital

U. S. I. R.
F. 4. 50.
P. B.
July 12/71.

situated on the Northwestern slope of Bramhall's Hill in said Portland described and numbered on a plan of a tract of about ten acres, extending from the Maine State Arsenal Grounds, to Congress Street which plan was made in September 1863, by Hare and Osgood, and is recorded in the Cumberland Registry of Deeds, in Plan Book, number two, page thirty six - the lots hereby conveyed being numbered one, three, five, seven, eight, ten, eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, twenty, twenty one, twenty two, twenty three, and twenty four 1. 3. 5. 7. 8. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22, 23 & 24. together with all my right title, and interest in and to the land adjoining any of said lots, embraced within the location of Ash Street, as laid out by the City the last year: The design of this Deed being to discharge bonds mentioned in Deeds to said Barnes from Moody H. Walker & wife dated 6. June 1870. recorded in said Registry, Book 377. page 302 & from Joseph L. Bailey dated 6 June 1870. recorded in said Registry Book 377. page 301, the Mortgage obligations of said Barnes mentioned in said Deeds, having been discharged, by said Hospital.

To Have and to Hold the same, together with all the privileges and appurtenances thereunto belonging, to them the said Corporation, its successors

~~heirs~~ and assigns forever. And I do covenant with the said Corporation, its successors

~~heirs~~ and assigns, that I will warrant and forever defend the premises to them the said Corporation its successors

~~heirs~~ and assigns forever, against the lawful claims and demands of all persons, claiming by, through, or under me.

In Witness Whereof, I the said Phinehas Barnes, and Ann B. Butler wife of the said Barnes, in testimony of her relinquishment of her right of Dower in the above described Premises

have hereunto set ~~my~~ hand and seal this Eighth day of July

in the year of our Lord one thousand eight hundred and seventy one.

Signed, Sealed and Delivered in presence of
Wilfred Barnes to P. B.
Wilfred Barnes to A. B. B.

P. Barnes Seal
Ann B. Barnes. Seal

State of Maine

Cumberland, ss. 8th July 1871 Personally appeared the above-named Phinehas Barnes

and acknowledged the above instrument to be His free act and deed. Before me,

James T. McCobb. Justice of the Peace.

Received July 11 1871, at 11 o'clock A. M., and recorded according to the original.

Attest. Thos Lucas Register.

with interest, and all cost and expenses, including all sums paid by said Grantee or assigns for insurance of the premises and for taxes, paying the surplus, if any, to the said Grantors, or their assigns; and such sale shall forever bar the said Grantors, and all persons claiming under them from all right and interest in the premises at law or in equity. It being mutually agreed that the said Grantee or assigns may purchase at said sale, and that no other purchaser shall be answerable for the application of the purchase money.

In witness whereof, we the said Grantors, Emily F. Bailey and Benjamin H. Bailey have hereunto set our hands and seals this thirteenth day of January in the year of our Lord eighteen hundred and seventy one.

Signed, sealed and delivered in presence of
Benj. Kingsbury Jr.

Emily F. Bailey. Seal
Benj H. Bailey. Seal

State of Maine.
Cumberland ss Portland January 13. 1871. Then personally appeared the abovenamed Benjamin H. Bailey and Emily F. Bailey and acknowledged the foregoing instrument to be their deed.

Before me,
Benj. Kingsbury Jr. Justice of the Peace.

Received Jan 14 1871 at 12 h 29 m P. M. and recorded according to the original.
Attest: Eben Leach Register

State of Maine
to
Maine General Hospital

State of Maine.

Resolves in favor of the Maine General Hospital.

Resolved, That all the right, title and interest of this State in and to the lot of land, not including the buildings thereon, situated on Bramhall Hill, in the city of Portland and County of Cumberland, being the present site of the State Arsenal, is hereby granted to the Maine General Hospital, a corporation established by act of the Legislature, passed February twenty-fourth, one thousand eight hundred and sixtyeight, to have and to hold to

said corporation for the purpose of erecting and maintaining thereon its hospital buildings; and when such land ceases to be so used it shall revert to the State. But this grant shall not take effect until it is shown to the satisfaction of the Governor that said Corporation has raised by responsible private subscriptions or donations the sum of Twenty Thousand Dollars; nor until the Governor has certified on a copy of this resolve certified by the Secretary of State, that the aforesaid condition precedent has been complied with; but when that is done, this grant shall take effect, and the recording of such certified copy, with the Governor's certificate thereon, in the Registry of Deeds in the County of Cumberland shall be sufficient record evidence thereof.

Resolved That when said Corporation has raised, received into its treasury and actually expended towards the construction of its hospital buildings on said lot, the sum of Thirty thousand dollars and this fact is shown to the satisfaction of the Governor he may draw his warrant on the Treasurer of State for the sum of Ten thousand dollars in favor of said Corporation and payable to its Treasurer; and when said Corporation has so raised, received into its Treasury and expended in the construction of its hospital buildings the sum of Ten thousand dollars more or Fifty thousand dollars in all including the Ten thousand from the State, and this fact is shown to the satisfaction of the Governor he shall draw his warrant on the Treasurer of State for the sum of Ten thousand dollars more in favor of said Corporation and payable to its Treasurer; and the sum of Twenty thousand dollars is hereby appropriated to carry into effect the purposes of this Resolve to be paid from any money in the Treasury not otherwise appropriated.

In the House of Representatives March 18 1870.

Read and passed finally.

Reuben Foster Speaker

In Senate March 18" 1870

Read and passed finally.

Wm. H. Boloter President

March 19th 1870. Approved. Joshua L. Chamberlain Governor

State of Maine

Office of Secretary of State,

Augusta, Dec. 15. 1870

I hereby certify that the forgoing is a true copy of the original as deposited in this Office.

Franklin Mc. Donn.

Secretary of State

I, Joshua L. Chamberlain Governor of Maine in compliance with the terms of the Resolve of which the foregoing is a copy certified by the Secretary of State, hereby certify that it has been shown to my satisfaction that the Maine General Hospital the corporation within named has raised by responsible private subscriptions and donations the sum of twenty thousand dollars.

In witness whereof I have hereunto set my hand this sixteenth day of December A. D. 1870

In presence of
F. L. Chamberlain
Charlotte M. Packard

Joshua L. Chamberlain
Governor of Maine

Received Jan. 16 1871 at 2 h. 44 m. P. M. and recorded according to the original.

Attest: Eben Leady Register

U. S. I. R. Fifty cts. N. H. M. Jan. 13. 1871

Know all men by these presents, that I, Wm. H. Moreland of Stoneham, Mass. in consideration of Four Hundred Fifty Dollars to me paid by Seth Moreland of Harrison, County of Cumberland, State of Maine, the receipt whereof is hereby acknowledged, do hereby sell, remise, release, and forever quitclaim unto the said Seth Moreland, all my right, title and interest in and to a certain farm or parcel of real estate described as follows, to wit, the same deeded to me by the said Seth Moreland by his deed, said deed dated Jany. fourth 1869, said deed recorded Book 364 Page 288. being the same farm Seth Moreland now lives on in Harrison all taxes excepted.

Moreland to Moreland

To have and to hold the above released premises, with all the privileges and appurtenances to the same belonging, to the said Seth, his heirs and assigns to their use and behoof forever. And I the said

Know all Men by these Presents, That

I Bartholomew Wren of Portland in the county of Cumberland State of Maine

in consideration of five hundred dollars paid by

The Maine General Hospital a corporation doing its business in said Portland

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital its successors its and their heirs and assigns forever, a certain lot of land on the easterly side of (what is or lately was) Ash Street in said Portland being sixty five feet in length & running back from the line of said Ash Street & forty feet in width being the same lot indicated as number six (No 6) on a certain plan of land surveyed for Moody F. Walker September 23, 1863 by Howe & Osgood Civil Engineers which plan is placed on file in the office of the Registry of Deeds for Cumberland county for the purpose of reference in the matter of conveyances that have been or may be made by said Moody F. Walker of the lots of land specified in said plan. The same property conveyed to me by said Moody F. Walker by deed dated the 11th October 1863 recorded in said Registry Book 323 page 199

Wren
To
Maine Gen Hospital

U.S.I.R.
$0.50
B.W.
Sept. 15
1871

To Have and to Hold the aforegranted and bargained Premises, with all the privileges and appurtenances thereof, to the said Corporation its successors its & their heirs and assigns, to their use and behoof forever. And I do covenant with the said Corporation its successors its & their heirs and assigns, that I am lawfully seized in fee of the Premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Corporation to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee its successors its & their heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Bartholomew Wren and Margaret wife of the said Bartholomew Wren in testimony of her relinquishment of her right of dower in the above described premises, have hereunto set our hands and seals this twenty eighth day of August in the year of our Lord one thousand eight hundred and seventy one

Signed, Sealed and Delivered
in presence of

James T. McCobb — Bartholomew Wren — Seal
Witness — Margaret her mark Wren — Seal
Michael White

Cumberland, ss. 15 September 1871 Personally appeared the above-named Bartholomew Wren and acknowledged the above instrument to be his free act and deed. Before me,

James T. McCobb Justice of the Peace

Received Sept. 18 1871 at 4 o'clock 17m. P.M. and recorded according to the original.

Attest, Register.

Know all Men by these Presents, That

The City of Portland, a corporation in the County of Cumberland, State of Maine

in consideration of One Dollar & other considerations paid by The Maine General Hospital, a corporation in said State & County & City,

the receipt whereof We do hereby acknowledge, do hereby remise, release, bargain, sell, and convey, and forever QUIT-CLAIM unto the said Maine General Hospital, its successors

~~heirs~~ and assigns forever, all our right, title, and interest in and to a lot of land, on the slope of "Bramhalls Hill", in said city, being the land which lies between the land owned by said Hospital & Gilman Street & Arsenal Street extended westerly & southerly, bounded: Beginning at the southwest corner of a lot of land conveyed to said Hospital by said city in 1870, thence southwesterly on the northerly line of Arsenal Street produced 130 feet, more or less, to Gilman Street, thence northerly by east line of Gilman Street 653 feet, more or less, to Bailey's land, thence southeasterly by Bailey's land 71 feet, more or less, to land of said Hospital, thence by said Hospital land 544 feet, more or less to point of beginning: Provided, That The Powder House now on said lot be allowed to remain, without expense to the city until such time as the city shall provide some other house for powder, or remove this one from the lot

Portland
To
M. General
Hospital

To Have and to Hold the same, together with all the privileges and appurtenances thereunto belonging, to the said Grantees, their successors & assigns, their heirs & assigns forever. ~~And~~ ~~do covenant with the said~~

~~heirs and assigns, that~~ ~~will warrant and~~ ~~defend the premises to~~ ~~the said~~

~~heirs and assigns forever, against the lawful claims and demands of all persons, claiming by, through, or under~~

In Witness Whereof, We the said Grantors, by Henry W. Hersey City Treasurer, authorized thereto by vote of the City Council of said City, approved the 2 March instant have hereunto set our hand and seal this sixth day of March in the year of our Lord one thousand eight hundred and seventy-five

Signed, Sealed, and Delivered in presence of

3 printed words erased & 4 interlined before execution

S. B. Beckett

City of Portland
by H. W. Hersey, Treas.

State of Maine

Cumberland, ss. March 1874. Personally appeared the above-named Henry W. Hersey and acknowledged the above instrument to be his free act and deed, & the free act & deed of said city.

Before me S. B. Beckett, Justice of the Peace.

Received March 19 1875, at 9 o'clock, 45 m. A. M., and recorded according to the original.

Attest, Henry C. Houston Register.

Know all Men by these Presents, That

Book 1250
Page 470

I, Margaret E. L. Sherman, of Norwalk, in the County of Fairfield and State of Connecticut,

in consideration of one dollar and other valuable consideration, paid by Maine General Hospital, a corporation organized and existing under the laws of the State of Maine, and located at Portland, in the County of Cumberland and State of Maine the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital, its successors and assigns forever, a certain lot or parcel of land, with the buildings thereon, situated on the northwesterly side of Arsenal Street in said Portland, bounded and described as follows: Beginning at a point on said northwesterly side of Arsenal Street where the northeasterly side line of land of said Maine General Hospital, formerly known as the Arsenal Lot, adjoins the lot hereby conveyed; thence running northeasterly by said Arsenal Street forty (40) feet to a point; and from these two points extending northwesterly, adjoining said land of Maine General Hospital and keeping a width of forty (40) feet, one hundred (100) feet more or less to Ellsworth Street.

Meaning and intending hereby to convey the same premises conveyed to William H. Bigelow by John B. Brown by deed dated March 30, 1863, recorded in Cumberland Registry of Deeds, Book 317, page 321, my title to the same having been acquired as devisee under the will of said William H. Bigelow, extract from which is recorded in said Registry of Deeds, Book 627, page 231, in which will I am designated as Margaret Eva Lena Taylor, and by deed of Joshua L. Taylor to me dated January 11, 1897, recorded in said Registry of Deeds, Book 640, page 282.

Said premises are conveyed subject to a mortgage to Portland Savings Bank upon which there is due the principal sum of $1,650, which the grantee hereby assumes and agrees to pay as a part of the consideration hereof.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital, its successors ~~heirs~~ and assigns, to its and their use and behoof forever. And I do covenant with the said grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; except said mortgage; that I have good right to sell and convey the same to the said grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons. except as aforesaid.

In Witness Whereof, I, the said Margaret E. L. Sherman, and I, John C. Sherman, husband of the said Margaret E. L. Sherman joining in this deed as grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises,

have hereunto set our hand s and seal s this third day of December in the year of our Lord one thousand nine hundred and twenty-six.

Signed, Sealed and Delivered in presence of

John F. Dana to M.E.L.S. — Margaret E. L. Sherman Seal.

Geo. Davis, C. G. Hanson } as to J.C.S. — John C. Sherman Seal.

State of Maine, CUMBERLAND, ss. December 3, 1926. Personally appeared the above named Margaret E. L. Sherman and acknowledged the above instrument to be her free act and deed.

Before me, John F. Dana, *Justice of the Peace.*

Received December 4, 1926, at 9 o'clock - m. A. M., and recorded according to the original.

Book 1282
Page 323

Know all Men by these Presents, That

I, Emma W. Hill of Portland in the county of Cumberland and State of Maine,

in consideration of one dollar and other valuable considerations, paid by Maine General Hospital, a corporation existing by law, with an established place of business in said Portland, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital, its successors and assigns forever, a certain lot or parcel of land, with the buildings thereon, situated in said Portland, and bounded and described as follows: Beginning at the intersection of the northerly side line of Arsenal street and the westerly side line of a passageway extending from Arsenal street to Ellsworth street; thence north 20° west sixty-one and five tenths (61.5) feet by the westerly side line of said passageway to a point; thence south 70° west about thirty-four and three tenths (34.3) feet to land formerly of Nathan Moses; thence southerly by said Moses land sixty-seven (67) feet to a point on the northerly side of Arsenal street; thence north 60° 58' east by the northerly side line of Arsenal street thirty-four (34) feet, more or less, to the point of beginning.

Together with the rights of the grantor in a twelve (12) foot passageway.

Meaning and intending to hereby convey the same premises conveyed to Everett L. Hill by Milcah M. Gwynn, by deed dated February 2, 1920, recorded in Cumberland Registry of Deeds, Book 1042, page 256, and the same conveyed to this grantor by said Everett L. Hill by deed dated October 15, 1924, recorded in Cumberland Registry of Deeds, Book 1168, page 351.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital, its successors ~~heirs~~ and assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its successors ~~heirs~~ and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, the said Emma W. Hill and Everett L. Hill, husband of the said Emma W. Hill, joining in this deed as grantor, and relinquishing and conveying his rights by descent and all other rights in the above described premises have hereunto set our hand s and seals this sixteenth day of December in the year of our Lord one thousand nine hundred and twenty-seven.

Signed, Sealed and Delivered in presence of

John B. Kehoe to both

Emma W. Hill Seal.

Everett L. Hill Seal.

State of Maine, CUMBERLAND, ss. December 16, 1927. Personally appeared the above named Emma W. Hill and acknowledged the above instrument to be her free act and deed.

Before me, John B. Kehoe, *Justice of the Peace.*

Received December 16, 1927, at 11 o'clock 10 m. A. M., and recorded according to the original.

Know all Men by these Presents, That

Book 1285
Page 450

I, Harriet L. Stevens of Portland in the County of Cumberland and State of Maine,

in consideration of one ($1.00) dollar and other valuable considerations, paid by Maine General Hospital, a corporation organized and existing under the laws of said State of Maine, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital,its successors and assigns forever, a certain lot or parcel of land, with the buildings thereon,situated in said Portland, bounded and described as follows: Beginning on the westerly side of a twelve (12) foot passageway leading from Arsenal Street to Ellsworth Street at a point sixty-one and five-tenths (61.5) feet distant from the intersection of the northerly side line of Arsenal Street with the westerly side line of said passage-way; thence south seventy (70°) degrees west,thirty-four and three-tenths (34.3) feet,more or less, to land formerly of Nathan Moses;thence northerly by said Moses land thirty-three (33) feet, more or less, to the southerly side line of Ellsworth Street;thence easterly along the southerly side line of Ellsworth Street thirty-four (34) feet, more or less, to its intersection with the westerly side line of said passageway;thence southerly along the westerly side line of said passageway thirty-eight and five-tenths (38.5) feet, more or less, to the point of beginning.

The above described premises are in the northerly portion of the premises conveyed to Shailer G. Cushing by Seth C. Gordon by his warranty deed dated September 21, 1907, and recorded in Cumberland County Registry of Deeds,Book 814,page 37.

Being the same premises conveyed to me under the name of Hattie L. Stevens by Perley W. Stevens by warranty deed dated December 24, 1912, and recorded in said Registry of Deeds, Book 906,page 161.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital,its successors ~~heirs~~ and assigns, to their use and behoof forever. And I do covenant with the said Grantee,its successors ~~heirs~~ and assigns, that I am lawfully seized in fee of the premises; that they are free of all encumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee,its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Wherenf, I, the said Harriet L. Stevens, and I, Perley W. Stevens,husband of the said Harriet L. Stevens,joining in this deed as Grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises

have hereunto set our hand s and seals this nineteenth day of February in the year of our Lord one thousand nine hundred and twenty-eight.

Signed, Sealed and Delivered in presence of

R. E. Snow to both

Harriet L. Stevens Seal.

Perley W. Stevens Seal.

State of Maine, CUMBERLAND, ss. February 19, 1928. Personally appeared the above named Harriet L. Stevens and acknowledged the above instrument to be her free act and deed.

Before me, Reuben E. Snow, *Justice of the Peace.*

Received March 20, 1928, at 2 o'clock30 m. P. M., and recorded according to the original.

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Know all Men by these Presents, That

I, Eunice M. Chase (formerly Eunice Margaret Graham) of Portland, in the County of Cumberland and State of Maine,

in consideration of One dollar ($1.00) and other valuable considerations, paid by Maine General Hospital,a corporation organized and existing under the laws of said State of Maine, and located at said Portland,
the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said

Maine General Hospital,its successors and assigns forever, a certain lot or parcel of land with the buildings thereon,situated on the westerly side of a thirty foot passage way leading Northerly from Ellsworth Street,in the City of Portland, State of Maine, and now known as Charles Street,and bounded and described as follows,namely;

Beginning in the westerly side line of said Charles Street at the northeasterly corner of land now or formerly of Charles A. Donnell,thence northerly, by said Charles Street,thirty feet,thence westerly,on a line parallel with the northerly line of said Donnell's land seventy-four and two-tenths (74 2/10) feet to the Arsenal Lot,so called, now owned by said Maine General Hospital;thence southerly by said Arsenal Lot,thirty feet to said Donnell's land;thence easterly by said Donnell's land seventy-four and two tenths (74 2/10) feet to the point of beginning.

Being the same premises conveyed to me under the name of Eunice Margaret Graham Chase by William Graham by warranty deed dated July 1,1919,recorded in Cumberland Registry of Deeds,Book 1042,page 471.

Also a certain other lot or parcel of land with the buildings thereon situated in said Portland on the westerly side of Charles Street, and bounded and described as follows,to wit:

Beginning on the westerly side line of said Charles Street at a point distant seventy-three (73) feet northerly from the northeasterly corner of land now or formerly of Wiggins;thence northerly by said Charles Street forty-seven (47) feet to a stake; and from these two points extending back westerly,at right angles with said Charles Street and keeping said width of forty-seven (47) feet,about seventy-four and two-tenths (74.2) feet to the "Arsenal Lot" so called, now owned by said Maine General Hospital; and being the same premises conveyed to Mary Rich Graham,deceased,by Charles A. Donnell,by his deed dated July 1, 1895, recorded in the Cumberland Registry of Deeds,Book 604,page 124.

My title to said premises was acquired as an heir-at-law of said Mary Rich Graham, and by warranty deed from William Graham and Paul G. Graham to me under the name of Eunice Margaret Graham,dated August 2,1912,recorded in said Registry of Deeds,Book 898,page 83.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital,its successors ~~heirs and assigns~~, to its and their use and behoof forever. And I do covenant with the said grantee, its successors ~~heirs and assigns~~, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee,its successors ~~heirs and assigns~~ forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Eunice M. Chase,and I, Harold B. Chase,husband of the said Eunice M. Chase joining in this deed as Grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises have hereunto set our hands and seals this twentieth day of April in the year of our Lord one thousand nine hundred and twenty-eight.

Signed, Sealed and Delivered in presence of

Eunice M. Chase Seal

John F. Dana to both

Harold B. Chase Seal

State of Maine, Cumberland, ss. April 20, 1928. Personally appeared the above named Eunice M. Chase and acknowledged the above instrument to be her free act and deed.

Before me, John F. Dana, *Justice of the Peace.*

Received April 20, 1928, at 10 o'clock 50m. A. M., and recorded according to the original.

Know all Men by these Presents, That

I, Elizabeth Naylor, of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable consideration, paid by Maine General Hospital, a corporation organized and existing under the laws of said State of Maine, and located at said Portland, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital,its successors and assigns forever, a certain lot or parcel of land, with the buildings thereon,situated in said Portland, on the northerly side of Ellsworth Street and westerly side of Charles Street,bounded and described as follows: Beginning at the corner formed by the intersection of the westerly side of Charles Street and the northerly side of Ellsworth Street, and running westerly by said Ellsworth Street to land conveyed by William R. Naylor to Samuel W. Joy by deed dated November 8,1905, and recorded in Cumberland County Registry of Deeds,Book 776,page 200;thence northerly by said Joy land to land now or formerly of Levi J. Jones;thence easterly by said Jones land to said Charles Street;thence southerly by said Charles Street to the point of beginning.

Being the same premises conveyed to William R. Naylor by John B. Brown by deed dated February 20,1872, recorded in Cumberland County Registry of Deeds,Book 393, page 105, excepting therefrom the portion thereof conveyed by William R. Naylor to Samuel W. Joy by deed aforesaid. My title to said premises having been acquired as devisee under the will of William R. Naylor, extract from which is recorded in said Registry of Deeds,Book 783,page 307.

Also hereby conveying any right,title and interest I may have in said Ellsworth Street.

Taxes for the year 1928 are to be prorated between the grantor and grantee.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital,its successors ~~heirs~~ and assigns, to its and their use and behoof forever. And I do covenant with the said Grantee,its successors ~~heirs~~ and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee,its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Elizabeth Naylor, being unmarried,

have hereunto set my hand and seal this 3rd day of July in the year of our Lord one thousand nine hundred and twenty-eight.

Signed, Sealed and Delivered in presence of

Nathan W. Thompson

Elizabeth Naylor Seal

State of Maine, CUMBERLAND, ss. July 3, 1928. Personally appeared the above named Elizabeth Naylor and acknowledged the above instrument to be her free act and deed.

Before me, Nathan W. Thompson, *Justice of the Peace.*

Received July 7, 1928, at 10 o'clock 45 m. A. M., and recorded according to the original.

Know all Men by these Presents, That

I, Samuel W. Joy, of Portland, in the County of Cumberland and State of Maine, Book 1206 Page 352

in consideration of one dollar and other valuable considerations, paid by Maine General Hospital, a corporation organized and existing under the laws of said State of Maine, and located at said Portland, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital, its successors and assigns forever, a certain lot or parcel of land, with the buildings thereon, situated on the northerly side of Ellsworth Street in said Portland, being numbered forty-three (43) on said Street, and bounded and described as follows: Beginning at a point thirty-two (32) feet westerly from the intersection of the northerly side line of said Ellsworth Street with the westerly side line of Charles Street; thence westerly by said Ellsworth Street forty-four (44) feet to the Arsenal lot, so called, now owned by the Maine General Hospital; thence northerly by said Arsenal or Hospital lot eighty-seven (87) feet to land now or formerly of Levi J. Jones; thence easterly thirty (30) feet to land now or formerly of William R. Naylor; thence southerly by said Naylor land eighty-seven (87) feet more or less to the first bound.

Being the same premises conveyed to me by William R. Naylor by deed dated November 3, 1905, recorded in Cumberland County Registry of Deeds, Book 776, page 200.

Also hereby conveying any right, title and interest I may have in and to said Ellsworth Street.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital, its successors heirs and assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Samuel W. Joy, having no wife,

have hereunto set my hand and seal this seventh day of July in the year of our Lord one thousand nine hundred and twenty-eight.

Signed, Sealed and Delivered in presence of

John F. Dana

Saml W. Joy Seal

State of Maine, CUMBERLAND, ss. July 7, 1928. Personally appeared the above named Samuel W. Joy and acknowledged the above instrument to be his free act and deed.

Before me, John F. Dana, *Justice of the Peace.*

Received July 7, 1928, at 10 o'clock 46 m. A. M., and recorded according to the original.

IN WITNESS WHEREOF, the said Lessor has hereunto set his hand and seal on the day and year first above written.

Signed, Sealed and Delivered in Presence of

It is further understood that no liquor, beer, or cigarette advertising shall be displayed on any structure that might be erected.

JOHN DONNELLY & SONS ------

WEST SCARBORO M.E.CHURCH ------

By A. W. Hodgman, Treas.

State of Maine. County of Cumberland,ss. March 31, 1939.

Personally appeared the above named Lessor and acknowledged the above instrument to be his free act and deed.

Before me, F. H. Tewksbury Justice of the Peace

Received March 31, 1939, at 3h 40m P. M., and recorded according to the original

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Canal Nat'l.Bk. of Port. Tr. & to Maine General Hospital Deed

KNOW ALL MEN BY THESE PRESENTS, That

WHEREAS, The Canal National Bank of Portland as Trustee having filed its Bill of Complaint against Vaughan Hall, Incorporated and Harry M. Verrill, Conservator of Casco Mercantile Trust Company dated May 20, 1938, praying for foreclosure of a certain mortgage indenture on property described in said Bill of Complaint, said mortgage indenture being dated as of the fifteenth day of September, 1925, and recorded in the office of the Registry of Deeds for Cumberland County in Book 1219 at Page 41, the Supreme Judicial Court within and for the County of Cumberland in proceedings numbered 5830 on the docket of said Court entered its decree of foreclosure and order of sale therein decreeing and ordering the sale of the property described in said mortgage and hereinafter described, and

WHEREAS, it was, among other things, ordered, adjudged and decreed by said decree of foreclosure that said sale should be made by and under the direction of Raymond J. Callahan who was thereby appointed Special Master for that purpose and who was thereby directed to make and conduct said sale and to execute a deed of conveyance of the property sold to the purchaser thereof upon an order of Court confirming such sale and upon payment or settlement of the purchase price as therein provided, and that such sale be made in the County Court House in the City of Portland, Maine, on a day and at an hour as fixed by said decree of said Supreme Judicial Court and that notice of the time, place and terms of said sale describing briefly the property to be sold and referring to said decree should be published at least once a week for three successive weeks prior to said sale in a newspaper of general circulation published in Portland, Maine, and that upon confirmation of the sale by the Court and upon payment by any purchaser of the purchase price of the property purchased by him in accordance with the decrees of said Court the Special Master should execute a deed conveying, assigning and transferring to such purchaser the property sold to him, and

WHEREAS, the Supreme Judicial Court, pursuant to said decree, duly fixed the time for said sale as February 15, 1939, at ten o'clock in the forenoon and on said date the Special Master, pursuant to the provisions of said decree dated January 17, 1939, and pursuant to order of Court dated February 15, 1939, adjourned said sale from time to time in accordance with orders and decrees of said Court until March 28, 1939, at the time and place ordered by said decree of Court dated January 17, 1939, and orders and decrees subsequent thereto and said Special Master made due advertisement of said sale in the manner described in said decree dated January 17, 1939, and posted all of said notices as required by the orders of Court made subsequent thereto and the Special Master did at the time and place and in the manner and subject to the conditions of said decree and orders of Court subsequent thereto fairly strike off and sell said property to Maine General Hospital, a corporation duly organized and existing under the laws of the State of Maine and having a usual place of business at Portland, in the County of Cumberland and State of Maine, and

WHEREAS, The Canal National Bank of Portland thereafter duly presented to the Court for confirmation the bid so received by said Special Master and the said Special Master duly made a report of said sale to said Court, and a decree of confirmation and a certain decree amending said decree of foreclosure and sale were made and entered therein on the thirty-first day of March, 1939, confirming said bid, report and sale, and making said sale subject to taxes levied against said premises or any part thereof which are or may be chargeable upon said property and directing the Special Master, upon payment of the purchase price in the manner prescribed by said decree of confirmation, to execute and deliver to said purchaser a deed or other instrument conveying, assigning and transferring to said purchaser said property so sold as aforesaid, and

WHEREAS, said Supreme Judicial Court, in accordance with said decree of confirmation, by a decree made and entered herein on the thirty-first day of March, 1939, approved the form of this deed as required by said decree of confirmation dated March 31, 1939, and

WHEREAS, said sale has been conducted and made in all respects in accordance with law and with the provisions of said decrees and order of sale;

NOW, THEREFORE, I, the said Raymond J. Callahan, in my capacity as Special Master and in consideration of these presents and of one dollar and other valuable considerations paid by Maine General Hospital, receipt whereof is hereby acknowledged, do hereby remise, release, bargain, sell and convey and quitclaim unto the said Maine General Hospital, a corporation organized and existing under the laws of the State of Maine, its successors or assigns, all the right, title and interest which said Vaughan Hall, Incorporated and/or Harry M. Verrill, Conservator of Casco Mercantile Trust Company, and all persons claiming under it or him has or have in and to the following described real estate situated in Portland, in the County of Cumberland and State of Maine, and all future rents and profits thereof arising

therefrom, subject, however, to the equity of redemption as provided in the Statutes of the State of Maine and subject also to the terms and conditions set forth in the decree of the Supreme Judicial Court dated January 17, 1939, and certain decrees dated March 31, 1939, and to any other decree which may be hereafter made which relates to the property hereby conveyed, together with the rights and privileges pertaining to said property subject to the conditions described in the decrees of the Supreme Judicial Court dated January 17, 1939, and March 31, 1939, and any unpaid taxes, but subject, however, at all times to the exceptions and provisions particularly described and set forth in the various decrees of said Supreme Judicial Court heretofore made and any that may be hereafter made during the period of redemption:

A certain lot or parcel of land with the buildings thereon situated in said Portland, and bounded and described as follows:- Beginning on the westerly side of Vaughan Street at the southeasterly corner of land now or formerly of the Portland Water District; thence southerly on Vaughan Street sixty (60) feet, more or less, to land now or formerly of John W.Deering; thence westerly by said Deering land one hundred and forty (140) feet, more or less, to land now or formerly of Portland School for Medical Instruction; thence northerly by land of said Portland School for Medical Instruction sixty (60) feet, more or less, to said land of said Portland Water District; thence easterly by said land of said Portland Water District one hundred and forty (140) feet, more or less, to the point of beginning; said lot containing eighty-four hundred (8400) square feet, more or less. Being the same premises conveyed to Vaughan Hall, Incorporated, by Ralph N. Bryant by his warranty deed dated December 19, 1913, and recorded in Cumberland County Registry of Deeds, in Book 927, Page 26.

For title to the above described promises reference is also hereby made to a certain mortgage indenture dated September 15, 1925, securing the First Mortgage Sinking Fund 5 1/2% Gold Bonds of Vaughan Hall Incorporated, said mortgage indenture being by and between said Vaughan Hall, Incorporated and The Canal National Bank of Portland, said mortgage indenture being recorded in Cumberland County Registry of Deeds in Book 1219, Page 41.

TO HAVE AND TO HOLD and possess and enjoy said property and every part and parcel thereof free from all claims, rights, interests whatsoever in or to the same by or of the said Vaughan Hall, Incorporated, its successors and assigns, or of Harry M. Verrill as Conservator of Casco Mercantile Trust Company and by or of the creditors of the Receiver appointed by the Supreme Judicial Court in the equity proceedings hereinbefore referred to, or by or of the stockholders of said Vaughan Hall, Incorporated, and by or of all persons claiming by, through or under them or any of them, including the said Receiver of said Vaughan Hall, Incorporated, and by or of all the parties to said cause hereinbefore described, but subject, however, to any and all taxes levied against said premises or any part thereof which are or may be chargeable upon said property or premises or any portion thereof prior to the

U.S.I.R. $31.50 R.J.C. 3/31/39

lien of the mortgage foreclosed in said proceedings and subject to the right of redemption of said property granted by the Statutes of the State of Maine and subject to the terms and conditions of all decrees of said Supreme Judicial Court made and entered in the cause herein referred to and to any other decree which may be hereinafter entered by said Court which relates or pertains to the property herein conveyed.

IN WITNESS WHEREOF, Raymond J. Callahan, as Special Master, has hereunto set his hand and seal this thirty-first day of March, 1939.

Signed, Sealed and Delivered in Presence of

Porter Thompson — Raymond J. Callahan Seal

Special Master

State of Maine. Cumberland,ss. — March 31, 1939.

Personally appeared Raymond J. Callahan and acknowledged the foregoing instrument to be his free act and deed and his free act and deed in his said capacity.

Before me, Porter Thompson Justice of the Peace

APPROVED:

Guy H. Sturgis

Justice Supreme Judicial Court

Received March 31, 1939, at 4h -m P. M., and recorded according to the original

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Casco Mer. Tr. Co.,Cons. of to Maine General Hospital Deed

WHEREAS, Harry M. Verrill of Portland, in the County of Cumberland and State of Maine, was appointed Permanent Conservator of Casco Mercantile Trust Company, a banking corporation organized and existing under the laws of the State of Maine and located at said Portland, by decree of the Supreme Judicial Court in Equity in and for the County of Cumberland and State of Maine, dated April 14, 1933, in an action in equity commenced by Sanger N. Annis against Casco Mercantile Trust Company in said Court by Bill in Equity dated March 18, 1933, and

WHEREAS, upon petition of Harry M. Verrill, Conservator as aforesaid, dated March 29, 1939, a decree issued out of said Court authorizing said Conservator to sell to Maine General Hospital, a corporation organized and existing under the laws of the State of Maine and located at said Portland, all the right, title and interest of said Casco Mercantile Trust Company in and to the following described real estate, which said decree is dated March 31, 1939, and

WHEREAS, said Conservator has sold, pursuant to the terms of said decree, to said Maine General Hospital all the right, title and interest of said Casco Mercantile Trust Company in and to the real estate hereinafter described.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS, That I, the said Harry M. Verrill, by virtue of the power and authority in me vested as aforesaid, and in my capacity as Conservator of Casco Mercantile Trust Company, and in consideration of one dollar and other valuable consideration, paid by Maine General Hospital, receipt whereof is hereby acknowledged, do hereby remise, release, bargain, sell, convey and quitclaim unto the said Maine General Hospital, its successors and assigns, all the

Know all Men by these Presents, That

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I, John T. Lennon of Portland in the County of Cumberland and State of Maine

in consideration of one dollar and other valuable considerations paid by Maine Medical Center, a corporation organized and existing under the Laws of the State of Maine and located at said Portland

the receipt whereof I do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors and assigns forever, certain lots or parcels of land with the buildings thereon situated in said Portland and bounded and described as follows:

First:

Beginning on the northerly side of Bramhall Street at the southwesterly corner of land now or formerly of Thomas H. Pratt, running thence westerly by said Bramhall Street fifty (50) feet to land now or formerly of Sophia M. Knight, and from these two points extending northerly towards Arsenal Street, holding to said width of fifty feet, and adjoining said Pratt premises on one side and said Knight premises on the other for a distance of sixty (60) feet to land now or formerly of Edward T. Burrowes. The said lot is the southerly portion of the premises conveyed to Albert B. Cole, Frank H. Cole and Warren W. Cole by Nettie E. Pierce by deed dated September 26, 1911 and recorded in the Registry of Deeds for said County of Cumberland in Book 882, Page 188. Said premises are numbered thirty (30) on said Bramhall Street.

Second:

A certain lot of land with the buildings thereon on the southerly side of Arsenal Street in said Portland bounded and described as follows:

Commencing at a point on the Westerly line of land of Maude E. Pratt at a point sixty (60) feet northerly from the northerly side of Bramhall Street, thence westerly on a line parallel with and sixty (60) feet from said Bramhall Street, fifty (50) feet, more or less, to land of Sophia M. Knight; thence northerly from these two points keeping a width of fifty (50) feet and bounded on the West by land of said Knight and on the East by land of said Pratt and George H. Fletcher, forty-nine (49) feet, more or less, to said Arsenal Street.

Being the same property conveyed to me by Harriet B. Foster by her warranty deed dated February 24, 1945 and recorded in the Cumberland County Registy of Deeds in Book 1771 Page 131.

Also conveying all my right, title and interest in and to Arsenal Street, recently abandoned by the City of Portland.

U.S.T.R. $16.50 J.T.L. 5/5/53

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors and assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors and assigns heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said John T. Lennon and Ann C. Lennon wife of the said John T. Lennon joining in this deed as Grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises,

have hereunto set our hand and seal this fifth day of May in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

John J. Devine to both

John T. Lennon Seal
Ann C. Lennon Seal

State of Maine, CUMBERLAND, ss. May 5, 1953. Personally appeared the above named John T. Lennon and acknowledged the foregoing instrument to be his free act and deed.

Before me, John J. Devine, Justice of the Peace

Received May 5, 1953, at 2 o'clock 30 m. P. M., and recorded according to the original.

Know all Men by these Presents, That

I, Donald D. McPhee of Portland in the County of Cumberland and State of Maine,

in consideration of one dollar ($1) and other valuable considerations paid by Maine Medical Center, a corporation duly organized and existing under the laws of the State of Maine and located at Portland in said County and State the receipt whereof I do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors and Assigns forever, the following described property:

A certain lot or parcel of land with the buildings thereon situated in said Portland and being the premises conveyed to me by Hope K. Fletcher by deed dated November 22, 1946 and recorded in Cumberland County Registry of Deeds in Book 1848, Page 160, in which deed said premises are described as follows:

Beginning at the Northeast corner of Sophia T. Jones lot, so-called, on Arsenal Street; thence Northeasterly on Arsenal Street fifty (50) feet to land of one Raymond; thence Southeasterly by line of Raymond forty-eight (48) feet, more or less, to land of one Haskell; thence Southwesterly along line of said Haskell land thirteen (13) feet and two (2) inches to a point; thence Northwesterly parallel to land of said Raymond three (3) feet to a point; thence Southwesterly along the line of said Haskell land thirty-six (36) feet, more or less, to land of said Jones; thence Northwesterly forty-six (46) feet, more or less to point of beginning.

Also conveying all my interest in and to said Arsenal Street, recently abandoned by the City of Portland.

U.S.I.R. $14.30 D.D.McP. 5/9/53

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors and Assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances: that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Donald D. McPhee and I, Lorraine J. McPhee wife of the said Donald D. McPhee joining in this deed as Grantor, and relinquishing and conveying my rights by descent and all other rights in the above described premises, have hereunto set our hand s and seal s this 9th day of May in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

Edward F. Dana to both

Donald D. McPhee Seal
Lorraine J. McPhee Seal

State of Maine, Cumberland, ss. May 9, 1953. Personally appeared the above named Donald D. McPhee and acknowledged the above instrument to be his free act and deed.

Before me, Edward F. Dana, Justice of the Peace

Received May 9, 1953, at 9 o'clock 37 m. A.M., and recorded according to the original.

Know all Men by these Presents, That

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I, Hazel B. Therio of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar and other valuable considerations paid by Maine Medical Center, a corporation duly organized and existing under the Laws of the State of Maine and located at said Portland
the receipt whereof I do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors and Assigns forever, the following described property:

A certain lot or parcel of land with the buildings thereon situated on the Westerly side of Bramhall Street in said Portland, being more particularly described in deed from Hazel E. Skillings to the Grantor, dated September 18, 1945 and recorded in Cumberland County Registry of Deeds in Book 1790, Page 500, in which deed said premises are described as follows:

A certain lot or parcel of land, with the buildings thereon situated in said City of Portland, on the Northwesterly side of Bramhall Street, bounded and described as follows: Beginning at the most easterly corner of land now or formerly of Sophia P. Jones; thence Northeasterly on said Bramhall Street fifty (50) feet to land now or formerly of one Raymond; thence Northwesterly by said Raymond land fifty-nine (59) feet; thence Southwesterly thirteen (13) feet two (2) inches, more or less, to a fence; thence Northwesterly by the line of the division fence three (3) feet two (2) inches; thence Southwesterly by said fence thirty-six (36) feet five (5) inches, more or less, to said Jones land; thence Southeasterly by said Jones land sixty-two (62) feet two (2) inches to the point begun at.

Also, all my right, title and interest in and to Arsenal Street recently abandoned by the City of Portland.

U.S.I.R. $9.90 H.B.T. 5/16/53

To Have and to Hold the aforegranted and bargained premises, with all ~~the~~ privileges and appurtenances thereof, to the said Maine Medical Center, its successors and Assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its successors and Assigns ~~heirs and assigns~~, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Hazel B. Therio, being unmarried, have hereunto set my hand and seal this 16th day of May in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

Edward F. Dana — Hazel B. Therio — Seal

State of Maine, CUMBERLAND, ss. May 16, 1953 Personally appeared the above named Hazel B. Therio and acknowledged the above instrument to be her free act and deed.

Before me, Edward F. Dana Justice of the Peace

Received May 16 19 53, at 10 o'clock 35 m. A. M., and recorded according to the original.

Know all Men by these Presents, That

We, Albert N. Tardif and M. Louise Tardif, both of Portland, County of Cumberland, State of Maine

in consideration of one dollar ($1.00) and other valuable considerations paid by Maine Medical Center, a Corporation established by law at said Portland

the receipt whereof we do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center its successors and Assigns forever, the following described property:

A certain lot or parcel of land with the buildings thereon situated on the northerly side of Bramhall Street in said Portland which was conveyed to the grantors by Wilhelmina M. Mantine, by deed dated September 16, 1935 and recorded in Cumberland County Registry of Deeds in Book 1478, Page 294 and therein described as follows: Beginning on the northerly side of Bramhall Street at the easterly corner of land formerly of James Miller; thence northeasterly by Bramhall Street twenty-one and seven twentieths (21 7/20) feet to a stake; thence northwesterly about one hundred eleven (111) feet to a point in the southerly side of Arsenal Street; thence southwesterly by Arsenal Street twenty-two and three quarters (22 3/4) feet to said Miller's land; thence southeasterly by said Miller's land one hundred eleven and four tenths (111 4/10) feet to the point of beginning.

Also all our right title and interest in and to Arsenal Street recently abandoned by the City of Portland.

U.S.I.R. $16.50
A.N.T.Et 6/11/53

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors and Assigns, to its and

their use and behoof forever. And we do covenant with the said Grantee, its successors and Assigns,

~~heirs and assigns~~, that we are lawfully seized in fee of the premises; that they are free of all incumbrances:

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs, shall and will warrant and defend the same to the said Grantee, its successors and Assigns

~~heirs and assigns~~ forever, against the lawful claims and demands of all persons.

In Witness Whereof, We the said Albert N. Tardif and M. Louise Tardif, the said Grantors, being Husband and Wife each joining in this deed as Grantors, and each relinquishing and conveying our respective rights by descent and all other rights in the above described premises,

have hereunto set our hand s and seal s this 11th day of June in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

Edward F. Dana	Albert N. Tardif	Seal
to both	M. Louise Tardif	Seal

State of Maine, CUMBERLAND, ss. June 11, 1953 Personally appeared the above named Albert N. Tardif and M. Louise Tardif and acknowledged the above instrument to be their free act and deed.

Before me, Edward F. Dana Justice of the Peace

Received June 12 1953, at 11 o'clock 5 m. A. M., and recorded according to the original.

Know all Men by these Presents, That

Book 2133
Page 311

We, Fred A. Patterson and Ella H. Whidden both of Derry in the County of Rockingham and State of New Hampshire, Ruby E. McKenzie of Raymond in said County and State and Alzo F. Patterson of Portland in the County of Cumberland and State of Maine

in consideration of One dollar ($1.00) and other valuable considerations paid by Maine Medical Center, a Corporation organized and existing under the laws of Maine and located at said Portland,
the receipt whereof we do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center, its Successors and Assigns forever, the following described property:

A certain lot or parcel of land with the buildings thereon, situated in said Portland on the northerly side of Bramhall Street and bounded and described as follows:

Beginning on the northerly side of Bramhall Street at the southwesterly corner of land formerly of Frederick A. Carle; thence running westerly by said Bramhall Street twenty-five (25) feet to a stake or point, and from these two points extending northerly adjoining said Carle land, keeping a width of twenty-five (25) feet, to Arsenal Street, being the premises conveyed to Daniel W. Patterson by Maria M. Jose by deed dated September 12, 1921 and recorded in Cumberland County Registry of Deeds in Book 1085, Page 228.

The said Daniel W. Patterson died intestate on September 3, 1952 leaving no widow and as his sole heirs-at-law, the Grantors herein.

The Grantee as part of the consideration hereof assumes and agrees to pay the taxes for the taxable year of 1953.

Also conveying all our right, title and interest in and to Arsenal Street recently abandoned by the City of Portland, Maine.

U.S.I.R. $13.20 A.F.P.Et 5/20/53

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its Successors and Assigns to its and their use and behoof forever. And we do covenant with the said Grantee, its Successors and Assigns, ~~heirs and assigns~~, that we are lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid.

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs, shall and will warrant and defend the same to the said Grantee, its Successors and Assigns ~~heirs and assigns~~ forever, against the lawful claims and demands of all persons.

In Witness Whereof, We the said Fred A.Patterson and Chrystine I.Patterson,wife of the said Fred A.Patterson;Ella H.Whidden and Charles F.Whidden,husband of the said Ella H.Whidden;Ruby E.McKenzie and Elmer W.McKenzie,husband of the said Ruby E.McKenzie,and Alzo F.Patterson and Bessie E.Patterson,wife of the said Alzo F.Patterson joining in this deed as Grantors,and relinquishing and conveying our rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this twentieth day of May in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

R.E. Jensen	Alzo F.Patterson Seal
R.E. Jensen	Bessie E. Patterson Seal
Carmela Chase	Fred A. Patterson Seal
Carmela Chase	Chrystine I. Patterson Seal
Arthur K. Smith	Ella H. Whidden Seal
Arthur K. Smith	Charles F. Whidden Seal
P. J. Campbell	Ruby E. MacKenzie Seal
P. J. Campbell	Elmer MacKenzie Seal

State of Maine. CUMBERLAND, ss. May 20, 1953 Personally appeared the above named Alzo F. Patterson and acknowledged the above instrument to be his free act and deed.

Before me, Raymond E. Jensen Justice of the Peace

Received June 12 1953, at 11 o'clock 5 m. A.M., and recorded according to the original.

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Book 2133
Page 317

Know all Men by these Presents, That

We, Leola J. Noyes and William H. Noyes, Jr., both of Portland, County of Cumberland, State of Maine,

in consideration of one dollar ($1.00) and other valuable considerations paid by Maine Medical Center, a Corporation established by law in said Portland

the receipt whereof we do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors and Assigns forever, the following described property:

A certain lot or parcel of land with the buildings thereon situated in said Portland between Bramhall and Arsenal Streets adjoining land formerly belonging to Sophia P. Jones and conveyed to us by Maud L. Pillsbury by deed dated October 2, 1951, recorded in Cumberland County Registry of Deeds in Book 2060, Page 419, and therein bounded and described as follows: Beginning on the northerly side of Bramhall Street at the southwesterly corner of said Jones land; thence running westerly by said Bramhall Street twenty-five (25) feet to a stake and from these two points extending northerly adjoining said Jones land keeping a width of twenty-five (25) feet, a distance of sixty-eight feet and two inches (68' 2"), which distances are marked by stakes and which stakes are twenty-six (26) feet distant from the southerly boundary line of Arsenal Street.

U.S.I.R.
$11.00
L.J.N.Et
6/12/53

To Have and to Hold the aforegranted and bargained premises, with all ~~the~~ privileges and appurtenances thereof, to the said Maine Medical Center, its successors and Assigns, to its and their use and behoof forever. And we do covenant with the said Grantee, its successors and Assigns, ~~heirs and assigns~~, that we are lawfully seized in fee of the premises; that they are free of all incumbrances; that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs, shall and will warrant and defend the same to the said Grantee, its successors and Assigns ~~heirs and assigns~~ forever, against the lawful claims and demands of all persons.

In Witness Whereof, We, the said Leola J. Noyes and William H. Noyes, Jr., the said grantors, both being unmarried

our hand s and seals this 12th day of June have hereunto set in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

Edward F. Dana — Leola J. Noyes — Seal

to both — William H. Noyes, Jr. — Seal

State of Maine, CUMBERLAND, ss. June 12, 1953 Personally appeared the above named Leola J. Noyes and William H. Noyes, Jr. and acknowledged the above instrument to be their free act and deed.

Before me, Edward F. Dana Justice of the Peace

Received June 12 19 53, at 1 o'clock 44 m. P. M., and recorded according to the original.

Know all Men by these Presents, That

Maine Medical Center a corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine

in consideration of One Dollar and other valuable considerations paid by Maine General Hospital, a corporation organized and existing under the laws of the State of Maine and located at said Portland

the receipt whereof it does hereby acknowledge, does hereby, give, grant, bargain, sell and convey unto the said Maine General Hospital, its successors and assigns forever, a certain lot or parcel of land with the buildings thereon, situated in said City of Portland, between Bramhall and Arsenal Streets, adjoining land formerly owned by John W. Yeaton, and bounded and described as follows:

Beginning in the northerly line of Bramhall Street at the southeasterly corner of said Yeaton land; thence running easterly by Bramhall Street forty (40) feet and from these two points extending northerly, adjoining said Yeaton land, and keeping said width of forty (40) feet to Arsenal Street, being the same premises described in deed of J. B. Brown to Leon M. Bowdoin in 1867 by deed recorded in Cumberland County Registry of Deeds, Book 351, Page 340.

Being the same premises conveyed to this Grantor by Frederick W. McCarthy by deed dated June 30, 1953 and recorded in said Registry of Deeds in Book 2140, Page 92.

U.S.I.R.
$33.55
M.M.C.
8/18/53

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital, its successors and assigns, to its and their use and behoof forever. And the said Grantor Corporation does hereby covenant with the said Grantee, its successors and assigns,

~~heirs and assigns~~, that it is lawfully seized in fee of the premises; that they are free of all incumbrances:

that it has ~~have~~ good right to sell and convey the same to the said Grantee to hold as aforesaid; and that it and its successors ~~heirs~~ shall and will warrant and defend the same to the said Grantee, its successors and assigns

~~heirs and assigns~~ forever, against the lawful claims and demands of all persons.

In Witness Wherof, the said Maine Medical Center has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Phillips M. Payson, its President, thereunto duly authorized,

~~hand and seal~~ this 18th day of August ~~have hereunto set~~ in the year ~~of our Lord~~ one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

Edward F. Dana

MAINE MEDICAL CENTER
CORPORATE SEAL
By Phillips M. Payson
President.

State of Maine, County of CUMBERLAND, ss. August 18, 1953.

Then Personally appeared the above named Phillips M. Payson, President of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and deed, in his said capacity, and the free act and deed of said corporation.

Before me, Edward F. Dana, Justice of the Peace.

Received August 19, 1953, at 1 o'clock 40 m. P. M., and recorded according to the original.

Know all Men by these Presents, That

I, Henry H. Grant of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable consideration paid by Maine Medical Center, a corporation organized and existing under the laws of the State of Maine and located at said Portland,

the receipt whereof I do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center, its Successors and assigns forever, a certain lot or parcel of land with the buildings thereon situated between Bramhall and Arsenal Streets in said Portland, adjoining land now or formerly belonging to Sophia P. Jones, and more particularly bounded and described as follows:

Beginning on the northerly side line of said Bramhall Street, at the southwesterly corner of said Jones' land; thence westerly by said Bramhall Street, twenty-five (25) feet to a stake and from these two points extending northerly adjoining said Jones land, keeping the width of twenty-five (25) feet, to Arsenal Street.

Excepting and reserving however, a certain lot or parcel of land with the buildings thereon out of the aforesaid property, a conveyance by Westprom Realty Company to Maud L. and Janice M. Pillsbury by deed dated January 23, 1946 and recorded in Cumberland County Registry of Deeds in Book 1803, Page 444, to which reference may be had.

Meaning and intending to convey a parcel of land at the rear of 26 Bramhall Street, which parcel of land is approximately 26'x25' and contains a garage thereon.

Being the same premises conveyed to me by Westprom Realty Company by their warranty deed dated April 11, 1951 and recorded in said Registry of Deeds in Book 2040, Page 192.

U.S.I.R. $3.30
H.H.G.
9/4/53

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its Successors and assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its Successors and assigns, ~~heirs and assigns~~, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its Successors and assigns ~~heirs and assigns~~ forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Henry H. Grant and I, Gladys H. Grant, wife of the said Henry H. Grant joining in this deed as Grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises, have hereunto set our hands and seals this 4th day of September in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

H. Edwin Gee

Henry H. Grant Seal
Gladys H. Grant Seal

State of Maine, CUMBERLAND, ss. September 4, 1953. Personally appeared the above named Henry H. Grant and acknowledged the above instrument to be his free act and deed.

Before me, H. Edwin Gee, Notary Public, Notarial Seal, My Commission Expires June 29, 1956

Received September 9, 1953, at 9 o'clock 50 m. A. M., and recorded according to the original. p

Know all Men by these Presents, That

I, James S. Bell of Portland, County of Cumberland and State of Maine, Executor under the Will of Ethel B. Bell, deceased, late of Portland.

having on the 24th day of November A. D. 19 53, obtained License from the Honorable Nathaniel M. Haskell Judge of Probate, within and for the County of Cumberland and State of Maine, to sell and convey at private sale the Real Estate hereinafter described of the said Ethel B. Bell for the sum of

Eleven thousand seven hundred fifty ($11750.00) dollars

the same being an advantageous offer therefor, and having agreeably to the order and decree of said Court, given due notice upon the petition for license to make such sale, and having given the bond required by law, by virtue of the power and authority with which I am as aforesaid vested, and in consideration of the aforesaid sum of Eleven thousand seven hundred fifty ($11750.00) dollars, to me paid by Maine Medical Center, a corporation duly organized and existing by law with an office and place of business at Portland, said County and State.
the receipt whereof I do hereby acknowledge, have given, granted, and sold, and by these Presents do Give, Grant, Sell and Convey to the said Maine Medical Center, its Successors ~~Heirs~~ and Assigns forever, the following described Real Estate, viz.:

A certain lot or parcel of land with the buildings thereon, situated on Arsenal and Brackett Streets in said Portland, bounded and described as follows:

Beginning at the southwesterly side of said Brackett Street at the northwesterly corner of a lot of land conveyed by Mary J. Raymond to George E. Raymond by deed dated November 3, 1897, and recorded in the Cumberland County Registry of Deeds in Book 657, Page 411; thence southwesterly by said last named lot forty seven (47) feet; thence northwesterly and at right angles with the last described course to said Arsenal Street; thence northeasterly by said Arsenal Street to said Brackett Street; thence southeasterly by said Brackett Street to the point of beginning.

Excepting and reserving from the southeasterly portion of said above described premises so much thereof, as was described and conveyed in a certain deed from Ella C. Gardner to Gemma A. Applebee et al., said deed being dated November 27, 1935 and recorded in the Cumberland County Registry of Deeds, Book 1485, Page 206, and subject also to such easements and rights as were therein granted to said Gemma A. Applebee et al; by said deed above referred to.

Being the same premises conveyed to Kathryn Ireland by deed of Mary Dyer dated August twenty eighth, A. D. 1950 recorded in said Registry of Deeds for the County of Cumberland in Book 2014, Page 62.

Being the same premises conveyed to Sarah Friedman by deed of Kathryn Ireland which deed is recorded in the Cumberland County Registry of Deeds in Book 2051, Page 193.

Being the same premises conveyed to Ethel B. Bell by Sarah Friedman which deed is recorded in said Registry of Deeds.

U.S.I.R. $13.20 E.B.B. Est. 11/25/53

To Have and to Hold the same, with all the privileges and appurtenances to the same belonging, in manner as aforesaid, to the said Maine Medical Center, its Successors ~~Heirs~~ and Assigns forever.

And I the said James S. Bell in my said capacity do Covenant to and with the said Maine Medical Center, its Successors Heirs and Assigns, that I have in all things observed the rules and directions of law relative to the selling of said Estate, and have good right and lawful authority to sell and convey the same in manner aforesaid.

In Witness Whereof, I hereunto set my hand and seal in my said capacity, this 25th day of November in the year of our Lord one thousand nine hundred and fifty three

Signed, Sealed and Delivered in presence of

Morris Greenberg

Estate of Ethel B Bell
James S. Bell Executor Seal

State of Maine, Cumberland, ss. November 25, 1953. Personally appeared the above named James S. Bell and acknowledged the ~~above~~ foregoing instrument to be his free act and deed, in said capacity.

Before me, Morris Greenberg Justice of the Peace

Received November 25 19 53, at 4 o'clock 56m., P. M., and recorded according to the original. e/

(102)

Know All Men by these Presents,

That MAINE GENERAL HOSPITAL ~~Company~~

a corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine

Maine General Hospital to Maine Medical Center

War

in consideration of One Dollar ($1.00) and other valuable considerations (being less than $100)

paid by MAINE MEDICAL CENTER; a corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine

the receipt whereof it does hereby acknowledge, does hereby ~~give~~, grant, bargain, sell and convey, unto the said Maine Medical Center

its successors ~~heirs~~ and assigns forever,

a certain lot or parcel of land being a portion of Arsenal Street discontinued by the City of Portland and a small portion of land of the Grantor adjoining said discontinued land in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a point in the center line of discontinued Arsenal Street at its easterly extremity; thence northwesterly by said easterly extremity of discontinued Arsenal Street thirty (30) feet to land of the Grantor; thence southwesterly by land of the Grantor, being the northerly sideline of the former location of Arsenal Street and at right angles to the last described course about thirty (30) feet to the easterly face of the new Maine Medical Center building; thence northwesterly at about right angles to the last described course and by the easterly face of said new building about five (5) feet to a corner of said building; thence southwesterly by the northerly face of said new building and by a line between said new building and the old building, said old building being known as the pavilion and again by the northerly face of said new building about forty-five (45) feet to a corner of said new building; thence southeasterly by the face of said new building at about right angles to the last described course about five (5) feet to the former location of the northerly sideline of said Arsenal Street; thence southwesterly by other land of the Grantor being the northerly sideline of the former location of Arsenal Street and at about right angles to the last described course and ten (10) feet to a point; thence southeasterly at right angles to the last described course thirty (30) feet to the center line of the former location of said Arsenal Street; thence northeasterly by said center line and passing through said aforementioned new building about eighty-five (85) feet to the point of beginning.

22 **To have and to hold** the aforegranted and bargained premises with all the privileges and appurtenances thereof to the said Maine Medical Center, its successors ~~heirs~~ and assigns, to its and their use and behoof forever.

And the said Grantor Corporation does hereby COVENANT with the said Grantee, its successors ~~heirs~~ and assigns, that it is lawfully seized in fee of the premises, that they are free of all incumbrances;

that it has good right to sell and convey the same to the said Grantee to hold as aforesaid; and that it and its successors, shall and will WARRANT AND DEFEND the same to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, the said Maine General Hospital ~~Company~~ has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Phillips M. Payson, its Treasurer, thereunto duly authorized, this 9th day of July in the year one thousand nine hundred and fifty-six.

Signed, Sealed and Delivered in presence of

Edmund L. Dana

MAINE GENERAL HOSPITAL

~~Company~~

By Phillips M. Payson

Treasurer.

Corporate Seal

State of Maine.

County of Cumberland **ss.** July 9, 19 56

Then personally appeared the above named

Phillips M. Payson, Treasurer of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporation. 23

Before me,

Edward Hanson Justice of the Peace.

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE JUL 10 1956
Received at 1 H 5 M, and recorded in
BOOK 2301 PAGE 21 Robert N. Carter Register

Know All Men by These Presents,

That M. S. Hancock, Inc.

M S Hancock Inc to Gordon --- War

a Corporation organized and existing under the laws of the State of Maine and located at Casco in the County of Cumberland and State of Maine in consideration of one dollar and other valuable consideration

paid by Benjamin H. Gordon of New Britain in the County of Hartford and State of Connecticut the receipt whereof it does hereby acknowledge, does hereby give, grant, bargain, sell and convey unto the said Benjamin H. Gordon, his heirs and assigns forever, [redacted]

Three certain lots or parcels of land situate in said Casco and on the southerly shore of Coffee Pond, so-known, the lots herein conveyed being Lot #13, Lot #14 and Lot #15 and delineated on a certain plan entitled "Coffee Pond Pines, Part II" as recorded in the Cumberland County Registry of Deeds, Plan Book 44, Page 40, together with a right of user in common with others who may have been or who may hereafter be granted a similar right in and to the road or right of way leading to said lots from Route #11, so-known, said road being delineated on said plan.

It shall be a condition of this conveyance and the Grantee, for himself and his heirs, administrators, executors or assigns, agrees that no dwelling shall be erected or constructed on any of said lots unless the same shall equal or exceed the sum of $1500.00 to build exclusive, however, of any necessary outbuildings or garages.

(24)

Know all Men by these Presents,

161

That the CITY OF PORTLAND, a body politic and corporate, located in the County of Cumberland and State of Maine,

Portland City of

to

Maine General Hospital

Q C

in consideration of One ($1.00) Dollar and other valuable considerations, the total of which is less than One hundred ($100.00) Dollars

paid by Maine General Hospital, a corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine,

the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey, and forever quit-claim unto the said

Maine General Hospital, its successors and assigns forever,

A certain lot or parcel of land situated in said Portland and bounded and described as follows:

Beginning at the point of intersection of the Northwesterly side line of Ellsworth Street extended in a Southwesterly direction and the Southwesterly side line of Charles Street; thence Southwesterly along a continuation of the Northwesterly side line of Ellsworth Street extended, a distance of thirty-eight (38) feet, more or less, to a point; thence in a Southeasterly direction parallel to and fifty (50) feet measured perpendicularly Southwesterly of the Northeasterly side line of Charles Street Extension, so-called, a distance of one hundred fifty-five (155) feet, more or less, to the Northerly terminus of Brackett Street as established and renamed by the City Council of the City of Portland; thence Northeasterly along the line terminating said Brackett Street a distance of thirty-eight (38) feet, more or less, to the point of intersection formed by the above-mentioned line and the Southwesterly side line of Charles Street Extension, so-called; thence Northerly along the Southwesterly side line of Charles Street extension, so-called, a distance of one hundred fifty-five (155) feet, more or less, to the point of beginning.

Being the same premises conveyed to the Grantor by warranty deed of the Grantee dated April 9, 1954, recorded in Cumberland County Registry of Deeds in Book 2173, Page 412.

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To have and to hold the same, together with all the privileges and appurtenances thereunto belonging, to it the said

Maine General Hospital, its successors

~~Heirs~~ and Assigns forever.

And the said Grantor Corporation does ~~covenant~~ with the said

Maine General Hospital, its successors

~~Heirs~~ and Assigns, that it will Warrant and ~~Forever~~ Defend the said premises to it the said Grantee, its successors ~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

In Witness Whereof, the said CITY OF PORTLAND

has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Edwin T. Simmons, Acting City Treasurer ~~xxxxx~~ thereunto duly authorized, this Fifteenth day of August in the year one thousand nine hundred and fifty-six.

Signed, Sealed and Delivered in presence of

M. Jane King

CITY OF PORTLAND

By Edwin T. Simmons
Acting City Treasurer

(CORPORATE SEAL)

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE AUG 21 1956
Received at 1 H — M and recorded in
BOOK 2308 PAGE 161

State of Maine. Cumberland ss. August 15, 1956.

Personally appeared the above named Edwin T. Simmons, Acting City Treasurer of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporation.

Before me

Justice of the Peace

Know all Men by these Presents, That

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Doak & to Maine General Hospital -- War

We, Albert E. Doak and Amelia Doak, both of Portland, County of Cumberland and State of Maine,

in consideration of one dollar and other valuable considerations paid by MAINE GENERAL HOSPITAL, a corporation organized and existing under the laws of the State of Maine, and having its principal place of business at said Portland,

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said MAINE GENERAL HOSPITAL, its successors and assigns, forever,

A certain lot or parcel of land with the buildings thereon, situated on the westerly side of Charles Street in said Portland, bounded and described as follows: Beginning at a fence post standing on the westerly side line of Charles Street and distant northerly seventy-three and eighty-four hundredths (73.84) feet from the northwesterly corner of Ellsworth and Charles Streets; thence northerly by said Charles Street forty (40) feet to land now or formerly of Frank Abbott; thence westerly by said Abbott's land seventy-four and fifty-six hundredths (74.56) feet to land of the said grantee; thence by land of said grantee southerly forty (40) feet to land now or formerly of W. R. Naylor; thence easterly by said Naylor's land seventy-four and forty-two hundredths (74.42) feet to the point of beginning.

Being the same premises conveyed to these grantors by Henry T. Orlando by deed dated May 29, 1951, and recorded in Cumberland County Registry of Deeds in Book 2044, Page 288.

The grantee corporation herein assumes and agrees to pay the 1957 real estate taxes as part consideration for this transfer.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said MAINE GENERAL HOSPITAL, its successors

and assigns, to its and their use and behoof forever. And we do covenant with the said Grantee, its successors and assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid; that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs and assigns shall and will warrant and defend the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, we, the said Albert E. Doak and Amelia Doak, husband and wife,

joining in this deed as Grantors, and relinquishing and conveying our rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this third day of May in the year of our Lord one thousand nine hundred and fifty-seven.

Signed, Sealed and Delivered in presence of

Edward B. Terry
to both

Albert E Doak
Amelia Doak

State of Maine, Cumberland ss. May 3, 1957.

Personally appeared the above named Albert E. Doak

and acknowledged the foregoing instrument to be his free act and deed.

Before me, Edward B. Terry
NOTARY PUBLIC.

STATE OF MAINE, CUMBERLAND COUNTY, SS. REGISTRY OF DEEDS

Received MAY 3 1957 at 2 o'clock 35 m. P. M., and recorded in BOOK 2349 PAGE 229 Attest: Martha W. S. Bailey Register

$6.05

Book 2619
Page 499

Grant
&
to
Maine
Medical
Center
--
War

Know All Men by These Presents,

499

That We, Henry H. Grant and Gladys H. Grant, both of Portland in the County of Cumberland and State of Maine,

in consideration of one ($1.00) dollar and other valuable considerations

paid by Maine Medical Center, a corporation duly organized and existing under the laws of the State of Maine and located at said Portland,

the receipt whereof we **do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said** Maine Medical Center, its successors

and assigns forever, a certain lot or parcel of land with the buildings thereon, situated in Portland in the County of Cumberland and State of Maine, on the northwesterly side of Bramhall Street, bounded and described as follows:

Commencing at the southwesterly corner of land, now or formerly, of James Miller and Charlotte Johnson on Bramhall Street; thence northwesterly by land of said James Miller and Charlotte Johnson, sixty (60) feet to land formerly of William J. Knowlton; thence southwesterly along said Knowlton land, parallel with said street, fifty-five (55) feet to a corner of land formerly of William J. Knowlton; thence parallel with first mentioned line sixty (60) feet, more or less, to said street; thence northeasterly by said street fifty-five (55) feet to the place of beginning.

Being the same premises conveyed to us by Russell Fanning by deed recorded in Cumberland County Registry of Deeds in Book 1833, Page 415, and are conveyed subject to the conditions contained in said deed.

The Grantee herein, as part of the consideration hereof, assumes and agrees to pay taxes for the taxable year 1961.



500

To have and to hold the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said

Maine Medical Center, its successors

~~heirs~~ and assigns, to its and their use and behoof forever.

And we do covenant with the said Grantee, its successors ~~heirs~~ and assigns, that we are lawfully seized in fee of the premises, that they are free of all incumbrances;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs shall and will Warrant and Defend the same to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, We the said Henry H. Grant

and Gladys H. Grant, being husband and

wife ~~xxxxxxxxxx~~

joining in this deed as Grantor s, and relinquishing and conveying all right by descent and all other rights in the above described premises, have hereunto set our hand s and seals this thirty-first day of July in the year of our Lord one thousand nine hundred and sixty-one.

Signed, Sealed and Delivered
in presence of

Gualtiero G. Wall — Henry H. Grant

R. E. Jensen — Gladys H. Grant

State of Maine, Cumberland, ss. July 31, 1961.

Personally appeared the above named Henry H. Grant

and acknowledged the foregoing instrument to be his free act and deed.

Before me,

Raymond E. Jensen
Justice of the Peace
~~Notary Public~~

AUG 4 1961
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 10 H 28 M A M, and recorded in
BOOK 2619 PAGE 499 Edward R. Thompson Register

Know All Men by These Presents,

That Sewall M. Hobson, 2nd, of Portland, County of Cumberland and State of Maine

in consideration of one dollar and other valuable consideration

paid by Maine Medical Center, a corporation duly organized and existing under the laws of the State of Maine with its principal office in said Portland

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors and assigns forever, a certain lot or parcel of land with the buildings thereon, situated on the northwesterly side of Bramhall Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at the intersection of the northwesterly side line of Bramhall Street with the easterly side line of Western Promenade; thence northeasterly by Bramhall Street One Hundred Four and one-tenth (104.1) feet to the southerly corner of land conveyed by John W. Yeaton to William J. Knowlton, by deed dated April 4, 1885, and recorded in Cumberland County Registry of Deeds, in Book 517, Page 186; thence northwesterly at right angles with Bramhall Street and by said Knowlton land Sixty (60) feet to the southeasterly side line of land conveyed by John W. Yeaton to William J. Knowlton by deed dated June 6, 1882, and recorded in said Registry of Deeds, in Book 488, Page 204; thence southwesterly by said Knowlton land Forty-one and seven tenths (41.7) feet to the easterly side line of Western Promenade at a point Seventy-seven and five tenths (77.5) feet southerly thereon from the southeasterly side line of Arsenal Street; thence southerly by Western Promenade Eighty-six and seventy-eight hundredths (86.78) feet to the point of beginning.

For Grantors title reference is made to the will of Annie H. Dana, and abstract of which is recorded in said Registry of Deeds, in Book 2423, Page 273, and to a certain deed from Saint Germain Foundation et als. dated February 1, 1960, and recorded in said Registry of Deeds in Book 2526, Page 80.

To have and to hold the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors

~~heirs~~ and assigns, to it and their use and behoof forever.

And I do covenant with the said Grantee, its ~~heirs~~ successors and assigns, that I am lawfully seized in fee of the premises, that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and any heirs shall and will Warrant and Defend the same to the said Grantee, its ~~heirs~~ successors and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof. We the said Sewall M. Hobson, 2nd

and Anne S. Hobson

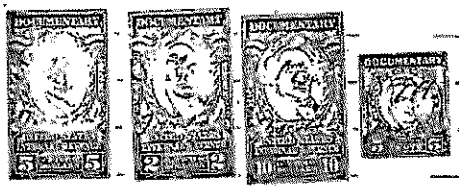
wife of the said Sewall M. Hobson, 2nd

joining in this deed as Grantor, and relinquishing and conveying her right by descent and all other rights in the above described premises, have hereunto set our hands and seals this Tenth day of July in the year of our Lord one thousand nine hundred and sixty-two.

Signed, Sealed and Delivered
in presence of

Gerald S Cope
to both

Sewall M. Hobson, 2nd
Anne S Hobson



State of Maine. Cumberland ss. July 10th 1962.

Personally appeared the above named Sewall M. Hobson, 2nd

and acknowledged the foregoing instrument to be his free act and deed.

Before me, Gerald S Cope
Justice of the Peace
~~Notary Public~~

JUL 10 1962
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 11 H 51 M A. M, and recorded in
BOOK 2686 PAGE 369 Sewall M Hobson Register

Book 2901
Page 326

326 (106)

Know all Men by these Presents,

That I, VINCENT C. NEWTON of Portland in the County of Cumberland and State of Maine

Newton to Maine General Hospita

in consideration of One Dollar ($1.00) and other valuable considerations

paid by MAINE GENERAL HOSPITAL, a corporation organized and existing under the laws of Maine and located at Portland in the County of Cumberland and State of Maine,

War

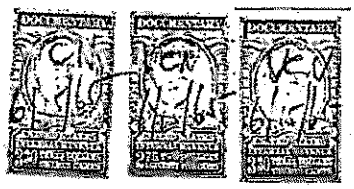
the receipt whereof I do hereby acknowledge, do hereby

give, grant, bargain, sell and convey, unto the said Maine General Hospital,

its successors ~~heirs~~ and assigns forever,

a certain lot or parcel of land with the buildings thereon situated on the westerly side of Charles Street in said Portland, bounded and described as follows:

Beginning on the westerly side line of said Charles Street at the northeasterly corner of land formerly of John M. Jones, now of Maine General Hospital; thence running northerly by said street thirty-eight (38) feet to land formerly occupied by one Graham, now owned by Maine General Hospital; and from these two points extending back westerly at right angles from said street keeping the width of thirty-eight (38) feet and bounded southerly by said Jones land and northerly by said Graham land about seventy-four and two tenths (74.2) feet to the Arsenal Lot, so-called, now of Maine General Hospital; being the same premises conveyed to me by Charles H. Abbott et al by deed dated February 10, 1944, recorded in Cumberland County Registry of Deeds in Book 1737, Page 278.



To Have and to Hold the aforegranted and bargained premises with all the privileges and appurtenances thereof to the said Maine General Hospital, its successors and assigns, to its and their use and behoof forever.

And I do COVENANT with the said Grantee, its successors and assigns, that I am lawfully seized in fee of the premises that they are free of all encumbrances:

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will WARRANT and DEFEND the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Vincent C. Newton, being unmarried

have hereunto set my hand and seal this 15th day of June in the year of our Lord one thousand nine hundred and sixty-five.

Signed, Sealed and Delivered in presence of

Edward J. McGoldrick

Vincent C. Newton

State of Maine, Cumberland } ss. June 15, 1965.

Personally appeared the above named Vincent C. Newton and acknowledged the above instrument to be his free act and deed.

Before me, Edward J. McGoldrick
Notary Public

MY COMMISSION EXPIRES OCTOBER 8, 1972

STATE OF MAINE
CUMBERLAND, ss. REGISTRY OF DEEDS
Received at 1 H. 26 M. P. M. on JUN 15 1965 and recorded in Book 2901 Page 326 Attest
Register

Book 2951
Page 927

(1984)
EXECUTOR'S AND TRUSTEE'S DEED
[WHEN THE WILL AUTHORIZES A SALE]

927

Know all Men by these Presents,

That I, HELEN M. GRIFFIN

of Portland in the county of Cumberland

sole acting executor of the last will and testament

of Mary Davis late of Portland

deceased, testate, by virtue of the authority to me given by

the said Mary Davis in her last will and

testament, in my capacity of executor as afore-

said, and in consideration of One Dollar ($1.00) and other

valuable considerations

to me paid by MAINE MEDICAL CENTER, a corporation organized under the laws of Maine and situated in Portland

the receipt whereof is hereby ac-

knowledged, do hereby sell and convey unto the said Maine Medical Center, its successors and assigns, the following described real estate, which was the property of the said Mary Davis.

A certain lot or parcel of land with the buildings thereon situated in Portland on the northerly side of Brackett Street, bounded and described as follows:

Beginning at the intersection of the northerly side of Brackett Street with the westerly side of Russell Street; thence running northeasterly by Russell Street thirty-seven (37) feet, more or less, to land formerly owned by Hobart W. Richardson; thence running northwesterly by said Richardson land seventy-four (74) feet, more or less, to land formerly owned or occupied by W. S. Dunn; thence southwesterly by the line of said Dunn's land forty-one (41) feet, more or less, to a lane; thence southeasterly by said lane forty-one (41) feet, more or less, to Brackett Street; thence easterly by Brackett Street thirty-seven (37) feet, more or less, to the point of beginning.

Being the same premises conveyed to Mary Davis by Harry E. Davis by deed dated March 18, 1915, recorded in Cumberland County Registry of Deeds in Book 945, Page 109.

Reference is made to Will of said Mary Davis, abstract of which is recorded in said Registry of Deeds in Book 3025, Page 28.

Davis
Est

to

Maine
Medical
Center

Exec

928

To have and to hold the above-granted premises unto the said Maine Medical Center, its successors ~~and~~ assigns forever. And I the said Helen M. Griffin, in my said capacity, do hereby covenant to and with the said Maine Medical Center, its successors ~~and~~ assigns, that I am the lawful executor of the last will and testament of the said Mary Davis ; that I have power under said will to sell as aforesaid; and that in making this conveyance, I have in all respects, acted in pursuance of the authority granted in and by the said last will and testament.



In Witness Wherent, I the said Helen M. Griffin in my said capacity of executor as aforesaid have hereunto set my hand and seal . this 31st day of March in the year of our Lord one thousand nine hundred and sixty-six.

Signed, Sealed and Delivered in presence of

Helen M Griffin

State of Maine, Cumberland ss. March 31 1966.

Then personally appeared the above named Helen M. Griffin and acknowledged the above instrument to be her free act and deed in her said capacity.

Before me,

Justice of the Peace.

MAR 31 1966
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 3 H 55 M, and recorded in
BOOK 2957 PAGE 927 Register

2081

722

Know all Men by these Presents,

J B Brown & Sons to Maine Medical Center

Q C

That J. B. BROWN & SONS, a corporation organized and existing under the laws of the State of Maine, and located at Portland in the County of Cumberland and State of Maine in consideration of one dollar and other valuable considerations, being less than $100.00 paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine, and located at said Portland, the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey, and forever quit-claim unto the said MAINE MEDICAL CENTER, its successors and assigns forever,

All its right, title and interest in a strip of land, in the City of Portland, County of Cumberland and State of Maine, said strip being that portion of Charles Street lying between Brackett Street and Ellsworth Street bounded as follows: Beginning at a point on the southeasterly line of Ellsworth Street distant southwesterly One Hundred Sixty-three and seven tenths (163.7) feet from a point in said street line Fifty-seven (57) feet at right angles from a stone monument on three feet offset at the northwest corner of Ellsworth and Wescott Streets; thence running southeasterly making an included angle with the northwesterly direction of Ellsworth Street of One Hundred and One degrees and Twenty minutes (101° 20') a distance of One Hundred and Sixteen (116) feet, more or less, to the northerly line of Brackett Street near Arsenal Street. Said strip is Thirteen (13) feet wide and lies on the southerly side of the above described line.

To Have and to Hold the same, together with all the privileges and appurtenances thereunto belonging, to the said MAINE MEDICAL CENTER, its successors ~~heirs~~ and assigns forever.

In Witness Whereof, the said J. B. BROWN & SONS has caused this instrument to be sealed with its corporate seal and signed in its corporate name by , its thereunto duly authorized, this 4th day of May in the year of our Lord one thousand nine hundred and sixty-six.

Signed, Sealed and Delivered in presence of

Ruth M. Dunn
to Lyman A. Cousens

J. B. BROWN & SONS

By Lyman A. Cousens Jr. Treas.
Philip G. Clifford Director
(Corporate Seal)

May 4 1966

State of Maine, Cumberland ss. 19 66.

Personally appeared the above named Lyman A. Cousens Jr. & Philip G. Clifford of said Grantor Corporation, as aforesaid, and acknowledged the foregoing instrument to be his free act and deed, in his said capacity, and the free act and deed of said corporation.

Before me, Nellie H. Foster NOTARY PUBLIC. ~~JUSTICE OF THE PEACE.~~

STATE OF MAINE, CUMBERLAND COUNTY, SS. REGISTRY OF DEEDS

Received MAY 4 1966 at 3 o'clock 17 m. P. M., and recorded in BOOK 2955 PAGE 722 Attest: Samuel R. Thompson Register.

Know all Men by these Presents, That

We, FRANK S. NEUTS and DELLA J. NEUTS, both of Portland, in the County of Cumberland and State of Maine

in consideration of one dollar and other valuable consideration s paid by JOHN P. CONSTANTINE and CHARLENE M. CONSTANTINE, both of said Portland

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said

JOHN P. CONSTANTINE and CHARLENE M. CONSTANTINE, as joint tenants and not as tenants in common, their heirs and assigns forever.

A certain lot or parcel of land, with the buildings thereon, situated on Charles Street, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning on the westerly side of Charles Street at the northerly corner of land formerly owned by C. B. Saunders; thence westerly by said Saunders northerly line seventy-five (75) feet, more or less, to land of the Maine General Hospital; thence northerly by line of said Hospital land thirty-six (36) feet to a point; thence easterly on a line parallel with Saunders northerly line seventy-five (75) feet, more or less, to the westerly side line of Charles Street; thence southerly by said Charles Street thirty-six (36) feet to the point begun at.

Being the same premises conveyed to us by Maine General Hospital by deed dated January 30, 1962 and recorded in Cumberland County Registry of Deeds in Book 2657, Page 19.

This conveyance is made subject, however, to the common passageway established by agreement between Maine General Hospital and Clarence D. Read, et al, dated October 29, 1954 and recorded in said Registry of Deeds in Book 2203, Page 413.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said JOHN P. CONSTANTINE and CHARLENE M. CONSTANTINE, as joint tenants and not as tenants in common, their

heirs and assigns, to them and their use and behoof forever. And we do covenant with the said Grantees, their heirs and assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances, except as aforesaid, that we have good right to sell and convey the same to the said Grantees to hold as aforesaid: and that we and our heirs and assigns shall and will warrant and defend the same to the said Grantees, their heirs and assigns forever, against the lawful claims and demands of all persons, except as aforesaid.

In Witness Whereof, we, the said FRANK S. NEUTS and DELLA J. NEUTS, being husband and wife,

joining in this deed as Grantors, and relinquishing and conveying our respective rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this second day of March in the year of our Lord one thousand nine hundred and sixty-seven.

Signed, Sealed and Delivered in presence of

Frank S. Neuts

Della J. Neuts

State of Maine, Cumberland, ss. March 2, 1967.

Personally appeared the above named Frank S. Neuts and Della J. Neuts and acknowledged the foregoing instrument to be their free act and deed.

Before me, [signature] Notary Public. Justice of the Peace.

STATE OF MAINE, CUMBERLAND COUNTY, SS. REGISTRY OF DEEDS

Received MAR 3 1967 at 11 o'clock A. m. and recorded in BOOK 2988 PAGE 139 Attest: [signature] Register.

22AB

KNOW ALL MEN BY THESE PRESENTS

THAT OLD COLONY TRUST COMPANY a Corporation located in Boston, County of Suffolk and Commonwealth of Massachusetts, sole surviving Trustee under a Trust Agreement created by ALICE A. BURKITT late of Portland and dated March 30, 1961 by virtue of the authority to it given by said Trust Agreement in its capacity of Trustee as aforesaid, and in consideration of One Dollar ($1.00) and other valuable considerations to it paid by MAINE MEDICAL CENTER of Portland, Maine, the receipt whereof is hereby acknowledged, does hereby sell and convey unto the said Maine Medical Center its successors and assigns forever, the following described real estate, which was the property of Alice A. Burkitt late of Portland, situated in said Portland, Maine and bounded as follows:

a certain lot or parcel of land with the buildings thereon, situated in said Portland, bounded and described as follows: Beginning at a point on the easterly side of Western Promenade, which point is eighty-five (85) feet from the intersection of the northeasterly side line of said Promenade with the northwesterly side line of Bramhall Street; thence northerly by the line of said Promenade seventy-seven and five tenths (77.5) feet, more or less, to Arsenal Street; thence northeasterly by said Arsenal Street seventy-four and one tenths (74.1) feet, more or less, to land now or formerly of William J. Miller et al; thence southeasterly at right angles to Arsenal Street by said Miller land fifty-five and five tenths (55.5) feet, more or less, to land formerly of Hiram Knowlton; thence southwesterly parallel with said Arsenal Street one hundred and twenty-seven (127) feet, more or less, to the Western Promenade and point of beginning, containing fifty-six hundred (5600) square feet more or less.

Also another parcel of land adjoining the above described lot, and bounded and described as follows: Commencing at a point on the northwesterly side of Bramhall Street, which point is the northeasterly corner of land of Frederick C. Hussey et al, and ninety-eight and two tenths (98.2) feet, more or less, from the intersection of said northwesterly side line of Bramhall Street with the easterly side line of the Western Promenade; thence northeasterly on said Bramhall Street thirty-three and five tenths (33.5) feet to a point and land formerly of Hiram Knowlton, and from these two points extending northwesterly keeping a width of thirty-three and five

tenths (33.5) feet a distance of sixty (60) feet to the first parcel herein conveyed, containing two thousand and ten (2010) square feet.

Meaning and intending to convey and hereby conveying the real estate acquired by Alice A. Burkitt by Warranty Deed of Good Will Home Association dated December 11, 1930 recorded in the Cumberland County Registry of Deeds Book 1361, page 373; said real estate having been devised to the Grantor as Trustee by the Will of Alice A. Burkitt duly probated in the Cumberland County Probate Court.

TO HAVE AND TO HOLD the above-granted premises unto the said Maine Medical Center its successors and assigns forever, And the said Old Colony Trust Company in its said capacity does hereby covenant to and with the said Maine Medical Center its successors and assigns that it is the sole surviving Trustee under said Trust Agreement; that it has power under said Trust Agreement to sell as aforesaid; and that in making this conveyance it has in all respects acted in pursuance of the authority granted in and by said Trust Agreement.

IN WITNESS WHEREOF, the said Old Colony Trust Company in its said capacity as Trustee as aforesaid has caused this instrument to be signed in its corporate name and sealed with its corporate seal by S. Vincent its ~~Trust Officer~~ Vice President thereunto duly authorized this 4th day of February 1969.

Witness:

OLD COLONY TRUST COMPANY

By _____
Its ~~Trust Officer~~ Vice President

COMMONWEALTH OF MASSACHUSETTS
SUFFOLK, SS. February 4, 1969.

Then personally appeared the above-named S. Vincent who made oath that the foregoing instrument was his free act and deed and the free act and deed of the Grantor corporation in its said capacity as Trustee as aforesaid.

Before me,

_____
Notary Public

Mary F. Archoska
NOTARY PUBLIC
My commission expires May 28, 1971

CERTIFICATE OF TRUSTEE

I, JAMES R. KINGSBURY of Newton Massachusetts, Trust Officer of Old Colony Trust Company of Boston, Massachusetts, hereby certify that Old Colony Trust Company became a Co-Trustee of a certain Revocable Inter Vivos Trust created by ALICE A. BURKITT with said Old Colony Trust Company and NORMAN A. BURKITT as Co-Trustees under a Trust Agreement dated March 30, 1961;

That Norman A. Burkitt is deceased and the Old Colony Trust Company is now acting as sole surviving Trustee;

That said Trust is no longer revocable inasmuch as the Settlor who reserved the power of revocation has since died;

That among the powers given to the Trustees is the following:

> "The Trustees, in addition to and not in limitation of all common law and statutory authority, shall have power, as to any real or personal property in the trust fund or any part thereof, to mortgage, to lease with or without option to purchase and although for a term extending beyond the termination of the trust, to sell in whole or in part at public or at private sale without approval of any court and without liability upon any person dealing with the Trustees to see to the application of any money or other property delivered to them; . . ."

Dated at Boston, Massachusetts, this 4TH day of February 1969.

James R. Kingsbury

COMMONWEALTH OF MASSACHUSETTS
SUFFOLK, SS.

February 4, 1969.

Personally appeared the above named James R. Kingsbury and made oath to the truth of the foregoing certificate by him subscribed.

Before me,

Mary F. Archoska
Notary Public

Mary F. Archoska
NOTARY PUBLIC
My commission expires May 28, 1971

FEB 17 1969
REGISTRY OF DEEDS, SUFFOLK COUNTY, MASS.
Received at 11 & 35 Min. and recorded in
BOOK 3673 PAGE 269 Edward R. Finn Register

No. 181

Know All Men by these Presents,

That I, CLARA G. READ, of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable considerations

paid by MAINE MEDICAL CENTER, a Maine corporation having a place of business in said Portland, in said County and State,

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center,

its Successors ~~Heirs~~ and Assigns forever,

the following described property:

A certain lot or parcel of land, with the buildings thereon, situated on the southwesterly side of Charles Street in said Portland, bounded and described as follows:

Beginning on said southwesterly side of Charles Street at a point thirty (30) feet northwesterly by said Street from the northeasterly corner of land formerly of Charles A. Donnell; thence northwesterly by said Street thirty (30) feet; thence southwesterly parallel with the line of said Donnell land seventy-four and two-tenths (74.2) feet to land formerly known as the Arsenal property; thence southeasterly by said Arsenal lot thirty (30) feet; thence northeasterly parallel with said Donnell land seventy-four and two-tenths (74.2) feet to the point of beginning.

Being the same premises conveyed to this Grantor and Clarence D. Read, as joint tenants, by Grace R. Loomis by deed dated September 1, 1948 and recorded in Cumberland County Registry of Deeds in Book 1926, Page 336. The said Clarence D. Read having deceased and his estate is of record in the Registry of Probate for Cumberland County, Maine.

The Grantor herein shall have the right to occupy the premises hereby conveyed until September 15, 1969.

STATE OF MAINE
REAL ESTATE TRANSFER TAX
Bureau of Taxation
13.75

To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said Maine Medical Center, its Successors

~~Heirs~~ and Assigns, to them and their use and behoof forever.

And I do **covenant** with the said Grantee, its/ Successors ~~Heirs~~ and Assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my Heirs, shall and will **Warrant and Defend** the same to the said Grantee, its Successors ~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Clara G. Read, being a widow,

~~xxxx~~ ~~xxxxxxxxxxxxxxxxxx~~

~~xxxxxxxxxxxxxxxxx

21?

No. 144

Know All Men by these Presents.

That We, WILLIAM C. GOKEY and SUZANNE E. GOKEY, both of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar ($1.00) and other valuable considerations

paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of Maine and located at Portland, County of Cumberland and State of Maine

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center,

its successors ~~Heirs~~ and Assigns forever,

the following described property:

A certain lot or parcel of land with the buildings thereon situated on the southeasterly side of Ellsworth Street in said Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at the northeasterly corner of a lot of land on Bramhall's Hill which John B. Brown sold to one Tuttle; thence northeasterly on said Ellsworth Street forty (40) feet; thence southeasterly about seventy-four (74) feet to land formerly of Davis; thence southwesterly by said Davis's land to land formerly of said Tuttle forty (40) feet; thence northwesterly to said Ellsworth Street, the bounds begun at, seventy-four (74) feet.

Being the same premises conveyed to William C. Gokey and Suzanne E. Gokey by Thelma A. Barter, by deed dated June 19, 1968, recorded in Cumberland County Registry of Deeds in Book 3045, Page 187.

This conveyance is made subject to taxes for the year 1969 which the Grantee assumes and agrees to pay.

D 2 0 1 3 8 STATE OF MAINE REAL ESTATE TRANSFER TAX 18.15

To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said Maine Medical Center, its successors

~~Heirs~~ and Assigns, to its and their use and behoof forever.

And we do , **covenant** with the said Grantee , its successors ~~Heirs~~ and Assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances; that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our Heirs, shall and will **Warrant and Defend** the same to the said Grantee , its successors

~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, we the said William C. Gokey and Suzanne E. Gokey, being husband and wife

~~and~~ ~~wife of the said~~

~~joining in this deed as Grantor, and relinquishing and conveying~~

~~rights by descent and all other rights in the above~~

~~described premises~~, have hereunto set our hands and seals this 11th day of August in the year of our Lord one thousand nine hundred and sixty-nine.

Signed, Sealed and Delivered in presence of

Edward F. Jones

William C. Gokey

Suzanne E. Gokey

State of Maine, Cumberland } ss.

August 11, 1969

Personally appeared the above named

William C. Gokey

and acknowledged the above instrument to be his free act and deed.

Before me, Edward F. Jones

Justice of the Peace

AUG 11 1969

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE

Received at 2 H 24 P M, and recorded in

BOOK 3097 PAGE 244 Edward R. Thompson Register

(106)

396

Know all Men by these Presents,

That JOHN P. CONSTANTINE and CHARLENE M. CONSTANTINE, both of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar ($1.00) and other valuable considerations

paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of Maine, and located at Portland, County of Cumberland and State of Maine

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center, its successors ~~heirs~~ and assigns forever,

a certain lot or parcel of land, with the buildings thereon, situated on Charles Street, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning on the westerly side of Charles Street at the northerly corner of land formerly owned by C. B. Saunders; thence westerly by said Saunders northerly line seventy-five (75) feet, more or less, to land of the Maine General Hospital; thence northerly by line of said Hospital land thirty-six (36) feet to a point; thence easterly on a line parallel with Saunders northerly line seventy-five (75) feet, more or less, to the westerly side line of Charles Street; thence southerly by said Charles Street thirty-six (36) feet to the point begun at.

Being the same premises conveyed to us by Frank S. Neuts, by deed dated March 2, 1967, recorded in Cumberland County Registry of Deeds in Book 2988, Page 139.

This conveyance is made subject, however, to the common passageway established by agreement between Maine General Hospital and Clarence D. Read et al, dated October 29, 1954, recorded in said Registry of Deeds in Book 2203, Page 413.

STATE OF MAINE
REAL ESTATE TRANSFER TAX
Bureau of Taxation
$ 1.95

To have and to hold the aforegranted and bargained premises with all the privileges and appurtenances thereof to the said Maine Medical Center, its successors and assigns, to its and their use and behoof forever.

And we do COVENANT with the said Grantee, its successors and assigns, that we are lawfully seized in fee of the premises that they are free of all encumbrances; except as aforesaid; that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs shall and will WARRANT and DEFEND the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons, except as aforesaid.

In Witness Whereof, we the said John P. Constantine and Charlene M. Constantine, being husband and wife,

were

have hereunto set our hands and seals this 7th day of November in the year of our Lord one thousand nine hundred and sixty-nine.

Signed, Sealed and Delivered in presence of

Edward J. Young

John P. Constantine

Charlene M. Constantine

State of Maine, Cumberland, ss. 19 69.

Personally appeared the above named John P. Constantine and acknowledged the above instrument to be his free act and deed.

Before me, Edward J. Young
Justice of the Peace.

NOV 7 1969

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 11 H 18 M. and recorded in BOOK 3108 PAGE 396
Register

Book 3183
Page 576

No. 106

14804

Know All Men by these Presents,

That I, AGNES E. TWEEDIE, formerly AGNES E. BROWN, of Portland, County of Cumberland and State of Maine

in consideration of One Dollar ($1.00) and other valuable consideration

paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine and having its principal place of business at Portland, County of Cumberland and State of Maine

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said MAINE MEDICAL CENTER,

its successors and Assigns forever,

the following described property: A certain lot or parcel of land, with the buildings thereon, situated in the City of Portland, County of Cumberland and State of Maine, on the corner of Brackett and Russell Streets and bounded as follows: Southwesterly by said Brackett Street; northwesterly by said Russell Street; northeasterly by land formerly of J. K. Emery and southeasterly by land now or formerly of Annie F. Chapman; containing about twenty-one hundred and fifty-one (2151) square feet.

Being the same premises conveyed to the Grantor herein and her late husband, Kenneth C. Brown, by deed dated January 22, 1962 and recorded in the Cumberland County Registry of Deeds, Book 2655, Page 344.

This conveyance is made subject to taxes for 1971 which the Grantee assumes and agrees to pay.

03136

STATE OF MAINE
REAL ESTATE TRANSFER TAX
AUG-27 Department of Taxation
$16.50

To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said

MAINE MEDICAL CENTER, its successors

~~Heirs~~ and Assigns, to its and their use and behoof forever.

And I do **covenant** with the said Grantee, its successors ~~Heirs~~ and Assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my Heirs, shall and will **Warrant and Defend** the same to the said Grantee, its successors

~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons, except as aforesaid

In Witness Whereof, I the said

AGNES E. TWEEDIE, being a widow

~~and~~ ~~wife of the said~~

~~joining in this deed as Grantor, and relinquishing and conveying rights by descent and all other rights in the above described premises,~~ have hereunto set my hand and seal this day of in the year of our Lord one thousand nine hundred and seventy-one.

Signed, Sealed and Delivered in presence of

[signature] — Agnes E. Tweedie

State of Maine, Cumberland } ss.

July 30 1971

Personally appeared the above named AGNES E. TWEEDIE

and acknowledged the above instrument to be her free act and deed.

Before me,

[signature]

~~Justice of the Peace~~

My commission [illegible]

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE AUG 2, 1971
Received at 2 H 41 M P M, and recorded in
BOOK 3183 PAGE 576 [signature] Register

234 **Know all Men by these Presents, That** 16674 Book 3187 Page 234

I, MARGUERITE M. BROOKS of Portland, County of Cumberland and State of Maine

in consideration of one dollar and other valuable consideration

paid by MAINE MEDICAL CENTER, a corporation organized under the laws of the State of Maine with a place of business at Portland, County of Cumberland and State of Maine,

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said MAINE MEDICAL CENTER, its successors and assigns forever.

A certain lot or parcel of land with the buildings thereon, situated on the southeasterly side of Ellsworth Street, in the City of Portland, County of Cumberland and State of Maine, and at present numbered forty-four (44) on said street; said lot of land being bounded and described as follows:

Beginning at the northeasterly corner of Ellsworth Street and a lane running from said Ellsworth Street to the junction of Brackett and Arsenal Streets; thence northeasterly by said Ellsworth Street, twenty-six (26) feet, more or less, to land now or formerly of Neal P. Thompson; thence southeasterly by said Thompson land, seventy-four (74) feet, more or less, to land now or formerly owned by John Russell; thence southwesterly by said Russell land, forty (40) feet, more or less, to said lane; thence northwesterly by said lane, seventy-five (75) feet, more or less, to the point begun at.

Being the same premises conveyed to me by Walter E. Mangum et al by deed dated October 15, 1957 and recorded in Cumberland County Registry of Deeds in Book 2379, Page 181.

This conveyance is made subject to taxes for 1971 which the Grantee assumes and agrees to pay.

STATE OF MAINE
REAL ESTATE TRANSFER TAX
AUG 23 '71
Bureau of Taxation
30.80

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said MAINE MEDICAL CENTER, its successors

~~heirs~~ and assigns, to their use and behoof forever. And I do covenant with the said Grantee, its successors ~~heirs~~ and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances except as aforesaid, that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs and assigns shall and will warrant and defend the same to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons, except as aforesaid.

In Witness Whereof, I, the said MARGUERITE M. BROOKS, being single,

~~joining in this deed as Grantor and relinquishing and conveying rights by descent and all other rights in the above described premises~~, have hereunto set my hand and seal this 23rd day of August in the year of our Lord one thousand nine hundred and seventy-one.

Signed, Sealed and Delivered in presence of

Charles R. Cartwicker

Marguerite M. Brooks

State of Maine, Cumberland ss. August 23, 1971.

Personally appeared the above named MARGUERITE M. BROOKS

and acknowledged the foregoing instrument to be her free act and deed.

Before me, Charles R. Cartwicker ~~Notary Public~~ Justice of the Peace.

STATE OF MAINE, CUMBERLAND COUNTY, SS. *REGISTRY OF DEEDS*

Received AUG 23 1971 *at* 1 ~~o'clock~~ 40 *m.* ~~P.~~ *M., and recorded in BOOK* 3187 *PAGE* 234 *Attest:* [signature] *Register.*

17330

710

Book 3188
Page 710

Know all Men by these Presents, That

PORTLAND WATER DISTRICT, a quasi-municipal corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine

in consideration of one dollar and other valuable considerations paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine and located at said Portland in said County and State

the receipt whereof it does hereby acknowledge, do es hereby remise, release, bargain, sell and convey, and forever quit-claim unto the said MAINE MEDICAL CENTER, its successors and assigns forever,

A certain lot or parcel of land situated in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at the intersection of the westerly side line of Vaughan Street with the southwesterly side line of Brackett Street; thence northwesterly by Brackett Street, two hundred forty-two and seventy-two hundredths (242.72) feet, more or less, to Bramhall Street; thence southwesterly by Bramhall Street, eighty-one and five hundredths (81.05) feet, more or less, to Chadwick Street; thence southerly by Chadwick Street, three hundred fifty-seven and forty-five hundredths (357.45) feet, more or less, to land of Chadwick Realty Corp.; thence by land of said Chadwick Realty Corp. and land of Maine General Hospital, two hundred eighty-eight and sixty-five hundredths (288.65) feet, more or less, to Vaughan Street; thence northerly by Vaughan Street, three hundred fifty-three and sixty-two hundredths (353.62) feet, more or less, to Brackett Street and the point of beginning. Containing 2.52 acres, more or less, and being known as the Bramhall Reservoir Lot.

A portion of the above-described premises, known as the J. & W. Warren Lot, was conveyed to the Portland Water Company by the following warranty deeds all dated May 1, 1869: deed of George Warren et al of a 1/3rd interest, recorded in Cumberland County Registry of Deeds, Book 368, Page 421; deed of John G. Warren of a 1/3rd interest, recorded in said Registry of Deeds, Book 368, Page 424; deed of Caroline Chadbourne et al of a 1/9th interest, recorded in said Registry of Deeds, Book 368, Page 423; and deed of Benjamin F. Chadbourne et al of a 2/9ths interest, recorded in said Registry of Deeds, Book 368, Page 425; and the remaining portion of said premises, known as the Payson Lot, was conveyed to said Portland Water Company by Henry M. Payson by warranty deed dated July 17, 1885, and recorded in said Registry of Deeds, Book 531, Page 32; all of said premises having been conveyed to said Portland Water District by Portland Water Company by quit-claim deed dated August 10, 1908, and recorded in said Registry of Deeds, Book 827, Page 147.

To Have and to Hold the same, together with all the privileges and appurtenances thereunto belonging, to the said

MAINE MEDICAL CENTER, its successors

~~heirs~~ and assigns forever. And it do es covenant with the said Grantee, its successors ~~heirs~~ and assigns, that it will warrant and forever defend the premises to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

In Witness Whereof, the said PORTLAND WATER DISTRICT has caused this instrument to be sealed with its corporate seal and signed in its corporate name by William D. Monie, its Treasurer, thereunto duly authorized,

~~In witness whereof I have hereunto set my hand and seal~~ this first day of September in the year of our Lord one thousand nine hundred and seventy-one.

Signed, Sealed and Delivered in presence of

PORTLAND WATER DISTRICT

By William D. Monie
Its Treasurer

State of Maine, Cumberland ss. September 1, 1971.

Personally appeared the above named William D. Monie, Treasurer of said Grantor Corporation, as aforesaid

and acknowledged the foregoing instrument to be his free act and deed, in his said capacity, and the free act and deed of said corporation.

Before me, Robert B. Williamson
~~Notary Public~~ Justice of the Peace.

STATE OF MAINE, CUMBERLAND COUNTY, SS. REGISTRY OF DEEDS

Received SEP 1 1971 at 12 o'clock 06 m. P M., and recorded in BOOK 3188 PAGE 710 Attest: Margaret E. Fuller Register.

17050

Know All Men by These Presents,

209

That the CITY OF PORTLAND, a body politic and corporate,

~~[illegible]~~ located at Portland

in the County of Cumberland and State of Maine

in consideration of Thirteen Thousand Five Hundred ($13,500.00) Dollars

paid by the MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine, whose address is 22 Bramhall Street, Portland, Maine

the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey and Forever Quit-Claim unto the said

Maine Medical Center, its successors

and assigns forever,

a certain lot or parcel of land in the City of Portland, County of Cumberland and State of Maine, being bounded and described as follows:

Beginning at a point marking the intersection of the westerly terminus of the northerly side line of Bramhall Street and the Northerly terminus of the easterly side line of Western Promenade; thence on a course of South 61° 00' 30" West along a prolongation of the northerly side line of said Bramhall Street, a distance of eighty-six and eight hundredths (86.08) feet to a point; thence North 50° 49' 20" West, a distance of one hundred fifty-one and thirty-nine hundredths (151.39) feet to a point which point is on the southeasterly side line of Arsenal Street as it was formerly laid out; thence North 62° 24' 00" East fifty (50) feet to a point; thence North 27° 36' 00" West, a distance of forty (40) feet to a point on the northwesterly side line of Arsenal Street, as it was formerly laid out; thence North 62° 24' 00" East, a distance of two hundred seventy-two (272) feet, more or less, to a point which point is two hundred forty-eight (248) feet from the starting point hereof when measured on a course of North 16° 58' 00" East from said starting point; thence South 16° 58' 00" West, a distance of two hundred forty-eight (248) feet to said starting point.

Being a portion of the premises conveyed to the Grantor by deed of Sarah Little dated July 11, 1856, recorded in Cumberland County Registry of Deeds in Book 274, Page 6.

By acceptance of this deed, the Grantee covenants and agrees for itself, its successors and assigns:

(1) That the Grantee shall secure Planning Board review and approval of the site plan for its proposed development prior to beginning construction of any building and landscaping of the land herein conveyed.

(2) That the Grantee shall submit to the Planning Board for review and approval a grading plan within three months from the date hereof; that it will initiate actual grading work within six months from the date hereof; and that it will complete such grading work within three months from the date of completion of the proposed building.

(3) That the Grantee shall provide and forever maintain access for fire equipment satisfactory to the Fire Chief of the City of Portland to the proposed building and the remainder of the Medical Center Building Complex.

(4) That in the event of failure of the Grantee to complete or substantially complete the construction of the proposed building, landscaping, and grading in accordance with the approved site plan within three (3) years from the date hereof, the Grantee shall be required at the election of the Grantor, to reconvey to the Grantor all or such portion of the premises herein conveyed as the Grantor shall require for an amount which bears the same per square foot price as was paid for the premises herein conveyed.

(5) That if within a period of eight (8) years from the date hereof, the Grantee shall decide to sell any portion of the premises herein conveyed without selling all of its premises, it shall notify the Grantor in writing by registered mail directed to the City Manager of the City of Portland of its desire to sell such portion and thereupon the Grantor shall have the exclusive option for a period of sixty (60) days from the receipt of such notice to buy such portion for an amount which bears the same per square foot price as was paid for the premises herein conveyed.

(6) That the Grantee shall simultaneously with delivery of this deed to it, deliver to the Grantor at no cost to it a deed covering a parcel of land located at the intersection of the easterly side line of Gilman Street and the northwesterly side line of Arsenal Street for the purpose of providing a turn-around area serving Gilman Street.

(7) That the Grantee shall construct or cause to be constructed at no cost to the Grantor said turn-around area in accordance with specifications to be approved by the Director of Public Works of the City of Portland.

To have and to hold the same, together with all the privileges and appurtenances thereunto belonging, to it the said Maine Medical Center its successors and Assigns forever. And the said Grantor Corporation does covenant with the said Maine Medical Center, its successors and Assigns, that it will Warrant and Forever Defend the premises to it the said Grantee, its successors and Assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

In Witness Whereof, the said CITY OF PORTLAND has caused this instrument to be sealed with its corporate seal and signed in its corporate name by JOHN G. DePALMA, its Director of Finance thereunto duly authorized, this 4th day of August in the year one thousand nine hundred and seventy-two.

Signed, Sealed and Delivered in presence of

CITY OF PORTLAND

By John G. DePalma
Director of Finance

(CORPORATE SEAL)

State of Maine. CUMBERLAND ss. August 4 1972.

Personally appeared the above named JOHN G. DePALMA, Director of Finance of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporation.

Before me,

Notary Public

AUG 4 1972

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 3 H 05 M Pm. and recorded in
BOOK 3278 PAGE 209 Register

23119

KNOW ALL MEN BY THESE PRESENTS that STATE OF MAINE, a body corporate and politic existing by law, in consideration of One Dollar ($1.00) and other valuable considerations paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine with its principal place of business in the City of Portland, County of Cumberland and State of Maine, the receipt whereof it does hereby acknowledge, does hereby RELEASE, GRANT and TRANSFER unto the said MAINE MEDICAL CENTER, its successors and assigns, all and any rights and interests in the former site of the State Arsenal situated on Bramhalls Hill, so-called, in the City of Portland, County of Cumberland and State of Maine, being all and the same premises described by Chapter 180 of the Resolves of the State of Maine, 1870, and Chapter 107 of the Resolves of the State of Maine, 1951, including any right of entry, reversion or other interest of the State of Maine in said premises reserved in the State of Maine by either of said Resolves and State of Maine does hereby waive as to said Maine Medical Center its successors and assigns any such rights which may now exist or which may in the future exist in State of Maine by virtue of said Resolves.

TO HAVE AND TO HOLD the aforegranted premises, with all privileges and appurtenances thereof to the said MAINE MEDICAL CENTER, its successors and assigns, and State of Maine does hereby covenant with said Maine Medical Center, its successors and assigns that State of Maine lawfully holds rights in said premises by virtue of said Resolves; that said rights are not encumbered; that it has good right to grant the same to Maine Medical Center as aforesaid; and that State of Maine, its successors and assigns, shall and will warrant and defend the same to Maine Medical Center, its successors and assigns forever against the lawful claims and demands of all persons; provided, nevertheless, that any and all liability of State of Maine for any damage or loss to Maine Medical Center, its successors and assigns, by virtue of any breach of the foregoing covenants and warranties shall be and hereby is limited forever to the total amount of One Dollar ($1.00).

IN WITNESS WHEREOF, Kenneth M. Curtis, Governor of the State of Maine, and Edmund C. Darey, Chairman of the Executive Council of the State of Maine, acting for and with the advice and consent of the said Executive Council given this date, have caused this instrument to be executed and sealed on behalf of the State of Maine this 6th day of September, 1972.

Witness:

Peter M. Dambrog

Thea L. Stewart

STATE OF MAINE

By Kenneth M. Curtis
Its Governor

By Edmund C. Darey
Its Chairman - Executive Council

STATE OF MAINE
KENNEBEC, ss.

September 6, 1972

Personally appeared the above-named Kenneth M. Curtis, Governor of the State of Maine, and Edmund C. Darey, Chairman of the Executive Council of the State of Maine and acknowledged the foregoing to be their free act and deed in said capacity and the free act and deed of said State of Maine.

Before me,

Peter M. Dambrog
~~Notary Public~~
Justice of the Peace

Approved as to form:

Leon V. Walker Jr.
Assistant Attorney General

STATE OF MAINE

CUMBERLAND, ss. REGISTRY OF DEEDS

Received at 11 H 16 M A M on OCT 12 1972 and recorded in Book 3310 Page 115 Attest [signature] Register

116

23120

KNOW ALL MEN BY THESE PRESENTS, that CITY OF PORTLAND, a body corporate and politic existing by law, situated at Portland, County of Cumberland and State of Maine, in consideration of One Dollar ($1.00) and other valuable considerations paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine with its principal place of business in the City of Portland, County of Cumberland and State of Maine, the receipt whereof it does hereby acknowledge, does hereby RELEASE, GRANT and TRANSFER unto the said MAINE MEDICAL CENTER, its successors and assigns, all its rights and interests in the land situated on Bramhall's Hill, so-called, in the City of Portland, County of Cumberland and State of Maine which land was conveyed by City of Portland to Maine General Hospital by deed dated June 4, 1870, which deed is duly recorded in the Cumberland County Registry of Deeds, Book 381, Pages 260, 261 and 262, to which deed reference is made for a particular description of said land, including any right of entry, possibility of reverter, reversionary or other interest of the City of Portland in said land reserved to said City in said deed and City of Portland does hereby waive as to said Maine Medical Center, its successors and assigns, said right of entry and any such other rights which may now exist or which may in the future exist in the City of Portland by virtue of said deed.

TO HAVE AND TO HOLD the aforegranted premises, with all privileges and appurtenances thereof to the said MAINE MEDICAL CENTER, its successors and assigns, and City of Portland does hereby covenant with said Maine Medical Center, its successors and assigns that City of Portland lawfully holds rights in said land by virtue of said deed of June 4, 1870; that said rights are not encumbered; that it has good right to grant the same to Maine Medical Center as aforesaid; that City of Portland, its successors and assigns, shall and will warrant and defend the same to Maine Medical Center, its successors and assigns forever against the lawful claims and demands of all persons; provided, nevertheless, that any and all liability of City of Portland for any damage or loss to Maine Medical Center, its successors and assigns, by virtue of any breach of the foregoing covenants and warranties shall be and hereby is limited forever to the total amount of One Dollar ($1.00).

IN WITNESS WHEREOF, City of Portland has caused this deed to be sealed and executed by John G. DePalma, its Director of Finance, hereunto duly authorized, this 14th day of September, 1972.

Witness:

CITY OF PORTLAND

By _____
Its Director of Finance

STATE OF MAINE
CUMBERLAND, ss.

September 14, 1972

Personally appeared the above-named John G. DePalma, Director of Finance of said City of Portland and acknowledged the foregoing to be his free act and deed in said capacity and the free act and deed of said City of Portland.

Before me,

_____
~~Justice of the Peace~~ Notary Public

OCT 12 1972
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 11 H/7 M/4M, and recorded in
BOOK 3310 PAGE 116 _____ Register

Book 3995
Page 53

53

No. 106
6367

Know All Men by these Presents.

That We, LEROY E. APPLEBEE and ROBERTA M. APPLEBEE, both of Portland, in the County of Cumberland and State of Maine,

in consideration of One Dollar ($1) and other valuable considerations,

paid by MAINE MEDICAL CENTER, a Maine corporation with a place of business in Portland, in the County of Cumberland and State of Maine,

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said MAINE MEDICAL CENTER, its successors

~~Heirs~~ and Assigns forever,

~~the following described property:~~

See attached Exhibit A.

54

To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said MAINE MEDICAL CENTER, its successors

~~Heirs~~ and Assigns, to it and their use and behoof forever.

And we do **covenant** with the said Grantee, its/ ~~Heirs~~ Successors and Assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our Heirs, shall and will **Warrant and Defend** the same to the said Grantee, its successors ~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, We, the said LEROY E. APPLEBEE

and ROBERTA M. APPLEBEE, ~~wife~~ husband and wife,

joining in this deed as Grantors, and relinquishing and conveying our/ mutual rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this 7th day of April in the year of our Lord one thousand nine hundred and seventy-seven.

Signed, Sealed and Delivered in presence of

LEROY E. APPLEBEE

ROBERTA M. APPLEBEE

State of Maine,
Cumberland, } ss. April 7 1977

Personally appeared the above named LEORY E. APPLEBEE and ROBERTA M. APPLEBEE and acknowledged the above instrument to be their free act and deed.

Before me,

Justice of the Peace

EXHIBIT A

A certain lot or parcel of land with the buildings thereon, situated on Bramhall Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a stone monument on the westerly corner of Brackett and Bramhall Streets; thence North 57° 20' West, 70.7 feet by the westerly sideline of Brackett Street; thence South 61° 07' West, 42.3 feet by the northerly sideline of a garage on the lot under description; thence South 27° 57' East, 62-1/2 feet to a point on the northerly sideline of Bramhall Street; thence North 61° 51' East, 77.5 feet by the northerly sideline of Bramhall Street to the stone monument aforesaid and point of beginning, together with the right to have the eaves of said garage which project over land of Ella C. Gardner remain as now constructed as long as said garage is maintained in its present position.

Being the same premises conveyed to Leroy E. Applebee and Roberta M. Applebee by Edna M. Sharp by deed dated September 27, 1972, and recorded in Cumberland County Registry of Deeds in Book 3303, Page 200.

APR 7 1977
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 10 H 22 M M. and recorded in
BOOK 3995 PAGE 53. Margaret L. Fisher Register

WARRANTY DEED

319

15732

Know all Men by these Presents,

That JAMES H. SULLIVAN, Jr. of 26 Charles Street, Portland in the County of Cumberland and State of Maine

in consideration of One Dollar ($1.00) and other valuable considerations

paid by MAINE MEDICAL CENTER, a Maine corporation with a place of business in Portland, in the County of Cumberland and State of Maine

whose mailing address is 22 Dramhall Street, Portland, Maine

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors

heirs and assigns forever,

A certain lot or parcel of land, with the buildings thereon, situated on the southwesterly side of Charles Street and the southeasterly side of Congress Street, in Portland, Maine, bounded and described as follows: Beginning at a point on the southwesterly side of said Charles Street at the northerly corner of land conveyed by Edward E. Proctor to Lulu M. Stickney by warranty deed dated May 16, 1890 and recorded in the Cumberland County Registry of Deeds in Book 567, Page 348; thence running southwesterly by said Stickney land a distance of seventy-five (75) feet, more or less, to land of the Maine General Hospital; thence running northwesterly by said Hospital land to the southeasterly side of Congress Street; thence running northeasterly by the southeasterly side of Congress Street seventy-five (75) feet, more or less, to land conveyed by Henry A. Sargent to Lucinda B. Proctor by warranty deed dated August 14, 1896, and recorded in said Registry of Deeds in Book 639, Page 284; thence running southeasterly by said Proctor land and by the southwesterly side line of said Charles Street to said Stickney land and the point of beginning.

Being the same premises conveyed to James H. Sullivan, Jr. by deed dated August 23, 1976 and recorded in said Registry of Deeds in Book 3936, Page 282.

320

To have and to hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors ~~heirs~~ and assigns, to it and its ~~their~~ use and behoof forever.

And I do covenant with the said Grantee, its/ successors ~~heirs~~ and assigns, that I am lawfully seized in fee of the premises, that they are free of all encumbrances

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will warrant and defend the same to the said Grantee, its/ successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said James H. Sullivan, Jr. being unmarried

~~[illegible]~~

~~[illegible]~~

~~[illegible]~~ relinquishing and conveying all rights by descent and all other rights in the above described premises, have hereunto set my hand and seal this 25th day of the month of May, A.D. 19 83.

Signed, Sealed and Delivered in presence of

[signature] James H. Sullivan, Jr.

State of Maine, County of Cumberland ss. 25 May, 19 83.

Then personally appeared the above named James H. Sullivan, Jr.

and acknowledged the foregoing instrument to be his free act and deed.

Before me,

[signature]

My commission expires Sept. 20, 1986

Justice of the Peace
Notary Public
Attorney at Law

MAY 26 1983

REGISTRY OF DEEDS CUMBERLAND COUNTY, MAINE
Received at 12:01 P.M., and recorded in
BOOK 6177 PAGE 319

James J. Walsh Register

024397 BK0309PG0005

Book 8309
Page 5

QUITCLAIM DEED
With Covenant

Know all Men by these Presents,

That we, JOHN J. HAMMETT and ELIZABETH B. HAMMETT, both of Portland, County of Cumberland, Maine

in consideration of One Dollar ($1.00) and other valuable consideration

paid by MMC REALTY CORP., a Maine corporation with a place of business at 22 Bramhall Street, in the County of Cumberland, Maine

whose mailing address is 22 Bramhall Street, Portland, Maine 04102

the receipt whereof we do hereby acknowledge, do hereby remise, release, bargain, sell and convey, and forever quitclaim unto the said MMC Realty Corp., its successors and assigns forever,

A certain lot or parcel of land, with the buildings thereon, situated on the northwesterly corner of Bramhall and Brackett Streets, in said Portland, and bounded and described as follows:

Beginning at the northwesterly corner of Brackett and Bramhall Streets; thence westerly on Brackett Street seventy-five (75) feet ten (10) inches, more or less, to land conveyed by William H. Chapman to Charles E. Graham by deed of April 29, 1920 and recorded in the Cumberland County Registry of Deeds in Book 1050, Page 213; thence northerly by land now or formerly of said Graham sixty-one (61) feet six (6) inches, more or less, to land conveyed by Alden J. Blethen to James K. Emery by deed dated April 30, 1880 and recorded in said Registry of Deeds in Book 467, Page 152; thence easterly by land now or formerly of said Emery sixty-six (66) feet six (6) inches to Bramhall Street; thence southerly by said Bramhall Street thirty (30) feet three (3) inches, more or less, to the point of beginning.

Being the same premises conveyed to the Grantors herein by Sumner J. Goffin by deed dated February 4, 1950 and recorded in said Registry of Deeds in Book 1985, Page 483.

MAINE REAL ESTATE TRANSFER TAX PAID

BK0309PG0006

To have and to hold the same, together with all the privileges and appurtenances thereunto belonging, to the said MMC Realty Corp., its successors

~~heirs~~ and assigns forever.

And we do covenant with the said Grantee, its/ successors ~~heirs~~ and assigns, that we shall and will warrant and defend the premises to the said Grantee, its/ successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons claiming by, through, or under us.

In Witness Whereof, we, the said John J. Hammett and Elizabeth B. Hammett

~~husband/wife of the said~~

~~having made the Grantee and acknowledging all right by the entered above the above described premises~~ have hereunto set our hands and seals this 31st day of the month of May, A.D. 19 88.

Signed, Sealed and Delivered in presence of

Lee D. Urban

Lee D. Urban

John J. Hammett

John J. Hammett

Elizabeth B. Hammett, By John J. Hammett as her Attorney in Fact pursuant to Power of Attorney dated August 16, 1984 and recorded herewith in the Cumberland County Registry of Deeds

State of Maine, County of Cumberland ss. May 31, 1988.

Then personally appeared the above named John J. Hammett

and acknowledged the foregoing instrument to be his free act and deed.

Before me,

Lee D. Urban

Notary Public
Attorney at Law

Printed Name Lee D. Urban

RECEIVED
RECORDED REGISTRY OF DEEDS
1988 JUN -1 AM 8:31
CUMBERLAND COUNTY
James J. Walsh

BK8855PG0081

036413 WARRANTY DEED

MAINE REAL ESTATE TAX PAID

KNOW ALL MEN BY THESE PRESENTS, that GILMAN STREET LAND COMPANY, a Maine corporation, and GILMAN STREET ASSOCIATES, a Maine limited partnership, for consideration paid, grant to MMC REALTY CORP., a Maine Corporation with a principal place of business in Portland, County of Cumberland, State of Maine, whose mailing address is 22 Bramhall Street, Portland, Maine 04103, with WARRANTY COVENANTS a certain lot or parcel of land, with the improvements thereon, located at 52 Gilman Street, in the City of Portland, County of Cumberland, State of Maine, all as more particularly described in Schedule A attached hereto and incorporated herein.

IN WITNESS WHEREOF, the said GILMAN STREET LAND COMPANY has caused this instrument to be sealed with its corporate seal and signed in its corporate names by William H. Webster, its President, hereunto duly authorized, this 4th day of August, 1989, and the said GILMAN STREET ASSOCIATES has caused this instrument to be signed and sealed by William H. Webster, President of its General Partner MORSE, PAYSON & NOYES PROPERTIES, hereunto duly authorized, this 4th day of August, 1989.

WITNESS:

Robert B. Patterson, Jr.

GILMAN STREET LAND COMPANY

By: _____
William H. Webster
Its President

GILMAN STREET ASSOCIATES

By: MORSE, PAYSON & NOYES PROPERTIES,
Its General Partner

Robert B. Patterson, Jr.

By: _____
William H. Webster
Its President

STATE OF MAINE
COUNTY OF CUMBERLAND, ss.

August 4, 1989

Then personally appeared before me the above named William H. Webster, President of Gilman Street Land Company, and President of Morse, Payson & Noyes Properties, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporations and partnership.

Before me,

Robert B. Patterson Jr.
~~Notary Public~~/Attorney at-Law

Robert B. Patterson, Jr.
Printed Name

~~My Commission Expires~~ _____

SCHEDULE A TO WARRANTY DEED

PARCEL ONE

A certain lot or parcel of land with the buildings thereon known as 52 Gilman Street, in Portland, County of Cumberland and State of Maine bounded and described as follows:

Beginning at a point on said street distant one hundred six and fifty-five one hundredths (106.55) feet northerly from the intersection of the westerly side of Gilman Street with the northerly side of A Street, and running thence northerly on said Gilman Street, thirty-seven and one half (37-1/2) feet to a point; thence westerly with an included angle of 91° 11' seventy and forty-two one hundredths (70.42) feet to a point; thence southerly and parallel to said Gilman Street, thirty-seven and one half (37-1/2) feet to land formerly of S. H. Jose, now of Gilman Street Land Company; thence easterly with an included angle of 91° 11' seventy and forty-two one hundredths (70.42) feet to the point of beginning.

PARCEL TWO

A certain lot or parcel of land with the buildings thereon, situated in said Portland, bounded and described as follows:

Beginning at a point in the Westerly side line of Gilman Street distant sixty-six (66) feet and one (1) inch South from the Southerly side line of Congress Street; thence running South by the side line of Gilman Street twenty-four (24) feet and eight (8) inches, more or less, to the Northerly line of land formerly of Winfield L. Smith, now of Gilman Street Land Company; thence by said line formerly of Smith and through the center of the partition wall between the house on said former Smith lot and the house on the lot herein described and by said line extended seventy and forty-two hundredths (70.42) feet and to land formerly of the City of Portland; thence North by said City of Portland land twenty-three (23) feet and eight (8) inches, more or less, to land conveyed by William B. Jordan to Willis B. Moulton et als, by deed dated May 14, 1897, and recorded in Cumberland County Registry of Deeds, Book 648, Page 450; thence in an easterly direction by said Moulton land seventy (70) feet and eight (8) inches to said Gilman Street and the point of beginning.

PARCEL THREE

A certain lot or parcel of land with the buildings thereon, situated on the westerly side of Gilman Street in said Portland and bounded as follows:

Beginning at a point on said westerly side of Gilman Street sixty-nine and five hundredths (69.05) feet northerly

from the northwesterly corner of Gilman and A Streets, and running thence northerly on Gilman Street thirty-seven and one-half (37-1/2) feet; thence westerly with an included angle of ninety-one degrees eleven minutes (91° 11') seventy and forty-two hundredths (70.42) feet to a stake; thence southerly with an included angle of eighty degrees forty-nine minutes (80° 49') thirty-seven and one half (37-1/2) feet; thence easterly with an included angle of ninety-one degrees eleven minutes (91° 11') seventy and forty-two hundredths (70.42) feet to the starting point. Being the southerly half of the lot conveyed to Samuel H. Jose by Charles F. Jose by deed dated December 6, 1886, and recorded in Cumberland County Registry of Deeds in Book 530, Page 255, to which reference is made. The premises herein conveyed are designated as No. 50 on said Gilman Street.

PARCEL FOUR

A certain lot or parcel of land with the buildings thereon situated on the westerly side of Gilman Street in Portland, County of Cumberland and State of Maine, the house being the southerly house in a block of two houses built on this and the adjoining lot, bounded and described as follows:

Beginning on the westerly sideline of Gilman Street ninety and seventy-eight hundredths (90.78) feet from the southerly line of Congress Street; thence southerly on line of Gilman Street fifty (50) feet to land formerly of Charles F. Jose, now of Gilman Street Land Company; thence westerly by said land formerly of Jose, seventy and forty-two hundredths (70.42) feet to land formerly of City of Portland; thence northerly by said City of Portland land fifty (50) feet; thence easterly seventy and forty-two hundredths (70.42) feet passing through the center of the division wall between said two houses to the point of beginning; containing 2520 square feet.

Meaning and intending to convey and hereby conveying the same premises which were conveyed to Gilman Street Land Company by John A. Godsoe, John E. Knowles, John T. Libby, Marvin C. Adams, Thomas A. Martin, Jr., and Vincent N. Oliviero, Trustees, by Trustees Deed dated December 28, 1984 and recorded in the Cumberland County Registry of Deeds in Book 6653, Page 290.

Subject to partition wall rights and obligations as set forth in deed from Virginia R. Buckley to Helen M. Sawyer dated May 4, 1948 and recorded in Cumberland County Registry of Deeds in Book 1912, Page 424 and in deed from Judith P. Johnson to Edgar J. Murphy and Louise M. Murphy dated August 31, 1948 and recorded in Cumberland County Registry of Deeds in Book 1926, Page 311.

RECEIVED
RECORDED REGISTRY OF DEEDS
1989 AUG -4 PM 4:02
CUMBERLAND COUNTY

056000

MAINE REAL ESTATE TAX PAID

KNOW ALL MEN BY THESE PRESENTS, That CASCO AERIE, NO. 565, FRATERNAL ORDER OF EAGLES, a/k/a CASCO AERIE FRATERNAL ORDER OF EAGLES #565, a/k/a FRATERNAL ORDER OF EAGLES CASCO AERIE NO. 565, a Maine corporation with a mailing address of 265 Valley Street, Portland, Maine 04112, and having a place of business at Portland, in the County of Cumberland and State of Maine, in consideration of $1.00 and other valuable consideration paid by MMC REALTY CORP., a Maine corporation, whose mailing address is 22 Bramhall Street, Portland, Maine 04102, the receipt whereof it does hereby acknowledge, does hereby give, grant, bargain, sell and convey unto the said MMC REALTY CORP., its successors and assigns forever, certain lots or parcels of land in the City of Portland, County of Cumberland, State of Maine, with any buildings thereon, bounded and described as follows:

261-269 Valley Street

A certain lot or parcel of land with the buildings thereon, situated in Portland and described as follows:

Beginning at a point on the North side of A Street, Portland, Maine, said point being the intersection of said North side line of A Street with the East side line of B Street, the name of which was changed to Valley Street in 1939; thence Northerly and making an included angle of Eighty-two (82) degrees Fifty-nine (59) minutes with the East direction of said North side line of A Street a distance of Two hundred eighty-five (285) feet, more or less, to a point in the South side line of Congress Street, said point being thirty-five (35) feet East along said South side line of Congress Street from its intersection with the East side line of Valley Street as now laid out and accepted; thence East along said South line of Congress Street and making an included angle of Ninety-four (94) degrees 49', a distance of forty-five (45) feet, more or less, to a point in the division line between the lot of land of the Grantor under description and land now or formerly of one Charles F. Jones; thence South along the said division line between land of the Grantor and land now or formerly of Charles F. Jones and land now or formerly of Charles C. Plummer, Ellsworth W. Stuart, Charles F. Jose, Maris M. and Charles F. Jose, Trustees, and Charles F. Jose a distance of 281.17 feet, more or less, to a point in the North side line of A Street; thence West and making an included angle of 89 degrees 57' and along the North side line of A Street a distance of Eighty (80) feet more or less to the point of beginning, containing 17,570 square feet, more or less.

Excepting therefrom a portion bounded and described as follows, to wit:

Beginning at a point on the East side line of said Valley Street One Hundred Fifty (150) feet South from the intersection of said East side line of Valley Street with the South side line of Congress Street, thence North by said East line of Valley Street One Hundred Fifty (150) feet to the South side line of Congress Street; thence East along said South side line of Congress Street making an included angle of 94 degrees 49', a distance of Forty-five (45) feet more or less, to a point in the division line between the lot of land under description and land now or formerly of one Charles F. Jones; thence South along the said division line between the land under description and the land of said Charles F. Jones and others One Hundred Fifty (150) feet, to a point; thence West 63.48 feet, to the point of beginning.

42 - 46 Gilman Street

A certain lot or parcel of land with the buildings thereon situated on the northwesterly corner of Gilman and A Streets in the City of Portland, County of Cumberland, State of Maine, and bounded and described as follows:

Beginning at the intersection of the westerly side of said Gilman Street with the northerly side of said A Street, and running thence northerly on said Gilman Street, sixty-nine and five one-hundredths (69.05) feet to land formerly of S.H. Jose; thence westerly by said S. H. Jose land, seventy and forty-two one-hundredths (70.42) feet to a stake; thence southerly and parallel with said Gilman Street seventy and forty-seven one-hundredths (70.47) feet to A Street; thence easterly by said A Street, seventy and forty-one one-hundredths (70.41) feet to the place of beginning.

268 - 270 Valley Street

A certain lot or parcel of land with the buildings thereon situated on the westerly side of Valley Street, formerly called B Street, in said Portland, bounded and described as follows:

Beginning at a point on said westerly side line of Valley Street at a point distance one hundred thirty six (136) feet northerly from the intersection of the westerly side of Valley Street and the northerly side of A Street; thence running southerly by said westerly side of Valley Street seventy-one (71) feet to a point; thence running westerly sixty (60) feet to land now or formerly of George W. Billings and Catherine A. Reed, at a point which is distant sixty-five (65) feet northerly from the northerly side line of A Street; thence running northerly by said Billings and Reed land sixty-four and seventy-six hundredths (64.76) feet to land formerly of William G. Davis and continuing northerly by said Davis land six and forty-three hundredths (6.43) feet; thence easterly approximately fifty-seven (57) feet to the point of beginning.

Being the same premises conveyed to the within grantors by the following deeds: Deed from Mid-Central Fish Company of Maine dated January 15, 1963 and recorded in Cumberland County Registry of Deeds in Book 2727, Page 347; Deed from Sebastiano Pennisi, et al dated June 25, 1963 and recorded in Cumberland County Registry of Deeds in Book 2759, Page 254; and Deed from Eugene S. Martin dated March 28, 1980 and recorded in Cumberland County Registry of Deeds in Book 4582, Page 291.

Subject to the following:

1. Taking of Valley Street as referenced in the deed from the City of Portland to the Unity Company dated October 20, 1937 and recorded in Cumberland County Registry of Deeds in Book 1527, Page 318 (261-269 Valley Street).

To have and to hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said MMC REALTY CORP., its successors and assigns, to them and their use and behoof forever.

AND the said Grantor Corporation does hereby covenant with the said Grantee, its sucessors and assigns, that it is lawfully seized in fee of the premises, that they are free of all encumbrances except as aforesaid, that it has good right to sell and convey the same to the said Grantee to hold as aforesaid; and that it and its successors, shall and will warrant and defend the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, the said CASCO AERIE, NO. 565, FRATERNAL ORDER OF EAGLES has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Robert James, Richard Brichetto, Hilbert Welch, Reginald Conohan and Fred Darling,

its Trustees thereunto duly authorized, this 21ST day of November, A.D. 1990.

CASCO AERIE, NO. 565,
FRATERNAL ORDER OF EAGLES

Witness

By: Robert James
Robert James
Its Trustee

Witness

By: Richard Brichetto
Richard Brichetto
Its Trustee

Witness

By: Hilbert Welch
Hilbert Welch
Its Trustee

Witness

By: Reginald Conohan
Reginald Conohan
Its Trustee

Witness

By: Fred Darling
Fred Darling
Its Trustee

STATE OF MAINE
COUNTY OF CUMBERLAND

November 21, 1990

Then personally appeared the above named Robert James, Richard Brichetto, ~~Hilbert Welch,~~ Reginald Conohan and ~~Fred Darling,~~ Trustees of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be their free act and deed in their said capacity, and the free act and deed of said Corporation.

Before me,

Attorney at Law
Notary Public
SHERRIE LYNN FONTAINE
NOTARY PUBLIC, MAINE
MY COMMISSION EXPIRES NOVEMBER 13 1996

Printed Name

SEAL

RECEIVED
RECORDED REGISTRY OF DEEDS
90 NOV 21 PM 3:54
CUMBERLAND COUNTY

17527

17527 9722 45

DEED OF SALE BY PERSONAL REPRESENTATIVE
(Testate)
Maine Statutory Short Form

Book 9722
Page 45

Know all Men by these Presents,

That Thomas F. Kane, Jr.

of Scarborough, County of Cumberland, State of Maine,

duly appointed and acting personal representative of the estate of Edna Faye Kane,

deceased (testate), as shown by the probate records of the County of Cumberland, Maine,

(and having given notice to each person succeeding to an interest in the real property described below at least ten (10) days prior to the sale) ~~(and not having given notice to each person succeeding to an interest in the real property described below at least ten (10) days prior to the sale, such notice not being required under the terms of the decedent's will)~~, by the power conferred by the Probate Code, and every other power, for consideration paid, grants to Maine Medical Center* of Portland,

*a nonprofit corporation organized and existing under the laws of the State of Maine

County of Cumberland, State of Maine,

whose mailing address is 22 Bramhall Street, Portland, ME 04102,

the real property in Portland, County of Cumberland,

State of Maine, described as follows:

A certain lot or parcel of land with the buildings thereon, situated in said Portland on the southeasterly side of Ellsworth Street, bounded and described as follows: -viz;-Beginning on the said southeasterly side of Ellsworth Street at land now or formerly of S.F. Haggett; thence southeasterly by said Haggett's land seventy-five (75) feet, more or less, to land now or formerly of J.T. Walton; thence southwesterly by said Walton's land and land now or formerly of N. Waterhouse eighty (80) feet, more or less, to land now or formerly of N.P. Thompson; thence northwesterly by said Thompson's land seventy-five (75) feet, more or less, to said Ellsworth Street; thence northeasterly by said Ellsworth Street to point begun at. Containing five thousand eight hundred forty (5,840) square feet, more or less. Said lot is numbered 34-36 and 38 as shown upon valuation plan of the City of Portland.

Being the same premises conveyed to Edna F. Kane by May Porter by her Warranty Deed, dated April 3, 1940 and recorded in Cumberland County Registry of Deeds in Book 1603, Page 134.

MAINE REAL ESTATE TAX PAID

Instr 47527 Bk 9722 Pg 46

Witness my hand and seal this 20th day of

September , 19 91 .

Signed, Sealed and Delivered
in presence of

Samuel J. Shatz

Personal Representative of the Estate of Edna Faye Kane

Thomas F. Kane, Jr.

Thomas F. Kane, Jr.

State of Maine, County of Cumberland **ss.** September 20 , 19 91 .

Then personally appeared the above named Thomas F. Kane, Jr.

in his said capacity and acknowledged the foregoing instrument to be his free act and deed.

Before me,

Samuel J. Shatz

Samuel J. Shatz
~~Justice of the Peace~~
~~Notary Public~~
Attorney at Law

Recorded
Cumberland County
Registry of Deeds
09/20/91 03:59:12PM
Robert P. Titcomb
Register

54881

WARRANTY DEED
(Maine Statutory Short Form)

KNOW ALL BY THESE PRESENTS, that I, William H. Leschey, Jr., whose mailing address is 930 Congress Street, Portland, ME 04102, for consideration paid, GRANT to MMC Realty Corp., a Maine corporation with an established place of business at and mailing address of 22 Bramhall Street, Portland, Maine 04102, with WARRANTY covenants, the land in Portland, County of Cumberland, State of Maine, which is more particularly described as follows:

A certain lot or parcel of land, with any buildings or improvements that may be thereon, situated on the southerly side of Congress Street, bounded and described as follows: BEGINNING on the southerly sideline of Congress Street at its intersection with the westerly sideline of Gilman Street; thence southerly by the westerly sideline of Gilman Street, sixty-six feet, one inch (66' 1") to the northeasterly corner of land now or formerly of Helen M. Sawyer; thence westerly by said Sawyer land seventy feet, eight inches (70' 8") to the easterly sideline of land now or formerly of Schwartz Bros. Inc.; thence northerly by said Schwartz Bros. Inc. land, sixty-two feet, one inch (62' 1") to the southerly sideline of Congress Street; thence easterly by the southerly sideline of Congress Street, seventy feet, eight inches (70' 8") to the point of beginning.

Being the same premises conveyed to the Grantor herein by deed of Edythe D. Field, dated May 11, 1987, and recorded in the Cumberland County Registry of Deeds in Book 7784, Page 182.

MAINE REAL ESTATE TAX PAID

WITNESS my hand and seal this 1st day of September, 1994.

SIGNED, SEALED AND DELIVERED
in the presence of:

William H. Leschey, Jr.

STATE OF MAINE
COUNTY OF CUMBERLAND, ss September 1, 1994

Then personally appeared the above-named William H. Leschey, Jr. and acknowledged the foregoing instrument to be his free act and deed.

Before me,

~~Notary Public~~ Attorney at Law
Printed Name: CHRISTOPHER J.W. COCCOSHALL

RECEIVED
RECORDED REGISTRY OF DEEDS
94 SEP -1 PM 3:05
CUMBERLAND COUNTY
John B O'Brien

REL/4078/AAO/DE

CC


CONGRESS ST. FIRST PHASE
SUMMER / JUNE 21
BOYNTON ST
WEYMOUTH ST
CONGRESS ST
CRESCENT ST
WESCOTT ST
ELLSWORTH ST
BRAMHALL PL
HILL ST
RUSSELL ST
BRACKETT ST
ST JOHN ST
VALLEY ST
GILMAN ST
FOREST ST
CONGRESS ST
MMC
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VALLEY ST
GILMAN ST
BRAMHALL ST
CHADWICK ST
VAUGHAN ST
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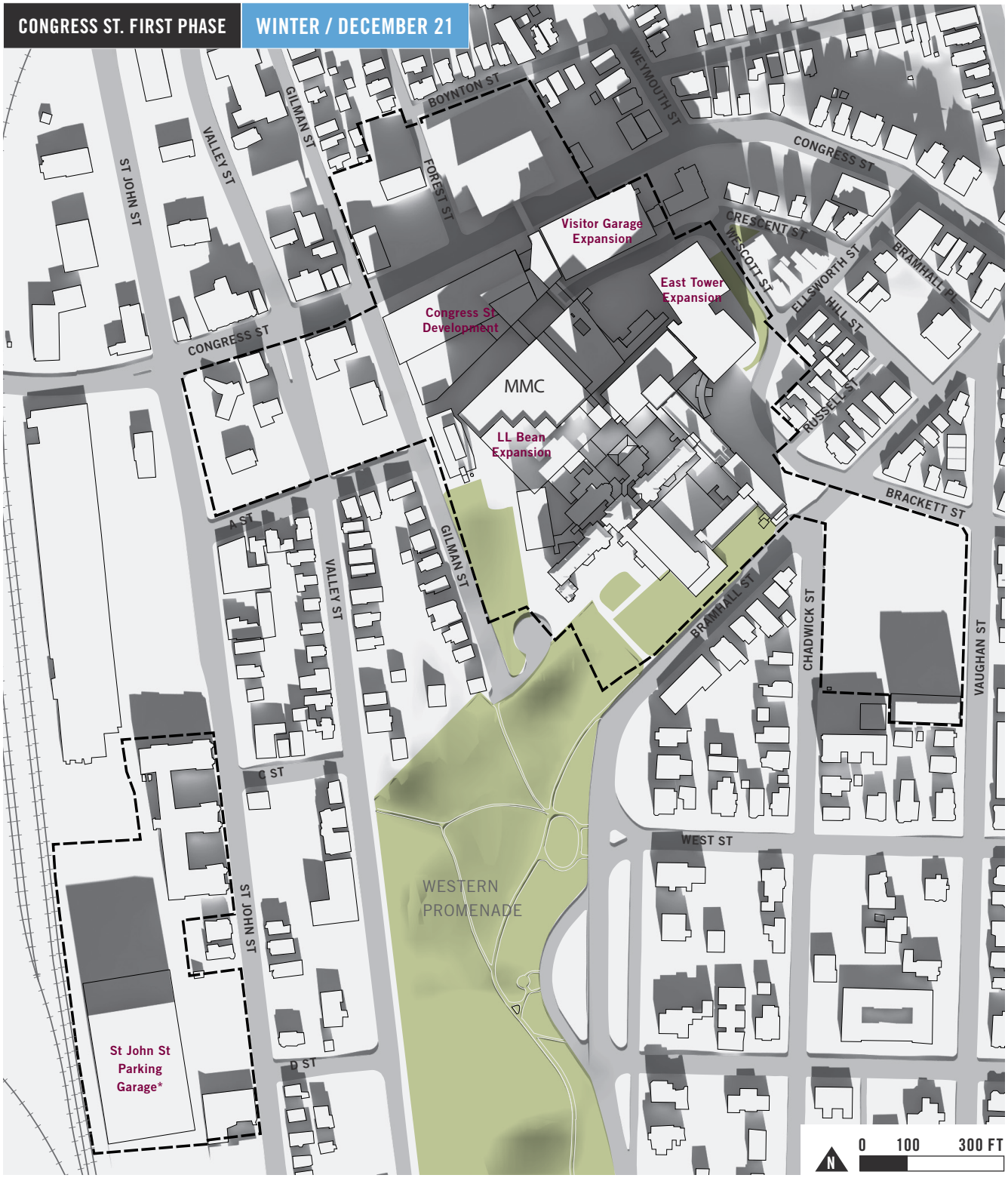


* NOTE: Exact garage location and footprint to be determined during detailed design.

WRITTEN SUBMISSION 03 – EVIDENCE OF STATE OR FEDERAL APPROVALS
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THE PROJECT WILL REQUIRE A DEP SITE LOCATION OF DEVELOPMENT PERMIT, WHICH WILL BE REVIEWED BY THE CITY UNDER ITS DELEGATED REVIEW AUTHORITY. THE PROJECT WILL ALSO REQUIRE APPROVAL FROM THE FEDERAL AVIATION ADMINISTRATION, WHICH WILL BE REVIEWED CONCURRENTLY WITH THE SITE PLAN APPLICATION. THE APPLICANT WILL PROVIDE EVIDENCE OF FAA APPROVAL UPON RECEIPT.

DD

WRITTEN SUBMISSION 29– SNOW AND ICE LOADING
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THE BUILDING IS DESIGNED WITH A FLAT ROOF AND WILL BE STRUCTURALLY DESIGNED TO ACCOMMODATE THE WEIGHT OF SNOW. NO SNOW WILL FALL ONTO ADJACENT PROPERTIES NOR PUBLIC WAYS.

E

November 1, 2018

Nell Donaldson, Senior Planner
City of Portland Planning Division
389 Congress Street
Portland, ME 04101

Re: MMC Congress Building| 22 Bramhall St| Level III Site Plan
Zoning Assessment

Dear Nell:

Thank you for coordinating the review of the Maine Medical Center Congress Building project located at 22 Bramhall with frontage on Congress St.. This letter provides an Assessment of Zoning Compliance for MMC's Site Plan Application for the Congress St. hospital building.

The proposed project is in alignment with the approved Maine Medical Center IDP and IOZ Regulatory Framework. The Congress St. Building is listed as a near-term project in the IDP. This project begins to address the key institutional needs identified in MMC's IDP. As outlined in the approved IDP, the goals of this project are to address MMC's multi-factorial clinical and building needs.

Compliance with the IOZ Regulatory Framework specified in the City of Portland Land Use Code (Chapter 14) and the MMC IDP is described in the following sections.

Applicability

The proposed development is within the boundaries of the MMC Institutional Overlay Zone (IOZ) specified in the IDP; therefore, the IOZ standards apply to this project.

Updates and Amendments

The proposed building is consistent with the MMC IDP approved by the Portland City Council in October 2017. No updates or amendments are proposed to the IDP as a part of this project.

Uses

Hospital is listed as a use permitted by right within the IOZ.

Dimensional Requirements

The proposed building will consist of 265,000 square feet of hospital space across six floors including a mechanical floor that is partially below grade at the Eastern edge of the building plus two partial floors required to connect the building to the rest of MMC's campus. As discussed in the IDP, MMC used a multi-part methodology to determine the appropriate height profile for potential future development within the IOZ boundary, including project definition, urban design analysis, slope analysis and visioning.

- **Building Height.** The maximum height identified in the IOZ Regulatory Framework for the location of the proposed building is 200'.

- The average building height for the proposed building is 64', considering the average proposed ground elevation of +70' at the building edge and the average roof elevation at the is 134'.

- **Building Setbacks.** A minimum of 0' is specified along the Western edge of the project area as shown in Map 4.2 of the IOZ.

    - The proposed building is located 0' from the right-of-way and has continuity with the Congress Street Build-to-Zone.

- **Congress Street Build-to-Zone.** The proposed building is located within the Congress Street Build-to-Zone as indicated on Map 4.2 in the IOZ. The Congress Street Build-to-Zone requires a minimum of 70% of the façade facing Congress Street to be located within the Congress Street Build-to-Zone which extends between 0' to 40' from the right-of-way boundary.

    - 99% of the façade facing Congress Street is within the Congress Street Build-to-Zone.

- **Transition Zone.** As identified on Map 4.1 in the IOZ, there are no transition zones associated with the project area.

Design

The IOZ regulatory framework specified that new buildings shall adhere to the design guidelines set forth in Chapter 5 of the IDP and the site plan standards of the City of Portland. Compliance with the design guidelines was detailed for the City in a memo from Perkins + Will to Al Green at MMC dated September 14, 2018 and submitted to the City as "35 Zone Related Design Standards (Design Narrative)"./ submission dated

Signs

Signage for the proposed building is outlined in the unified campus-wide Signage Master Plan submitted to the City. The Signage Plan demonstrates that signs are designed in proportion and character with building facades and adjacent street typology, and coordinated with the building and landscaping design, and will be constructed of appropriate permanent, high quality materials and finishes.

Transportation

The MMC Transportation Demand Management (TDM) Plan is discussed in the approved IDP (IDP page 74). As outlined in the IDP, MMC has considered its transportation needs holistically, factoring into its future development alternative means of transportation (IDP page 25). The City approved MMC's TDM Plan along with the Site Plan application for the St John Garage on September 11, 2018. That plan was submitted along with the Site Plan application for the Congress Building.

A parking demand analysis was conducted as part of the Transportation Plan in the IDP to determine parking needs based on supply and demand, and trip reduction efforts outlined in the TDM Plan. The analysis revealed an existing staff parking shortage of 150 to 200 spaces, with the MMC parking system typically operating at or above capacity during weekday daytime hours (IDP page 65). Approximately 500 to 600 additional staff parking spaces are required to meet projected demand based on expected staff growth. The City approved MMC's St. John St Garage site plan application on September 11, 2018 which takes steps towards addressing MMC's parking challenges.

Environment

The proposed development incorporates features that are designed to integrate with the surrounding context, including open space and pedestrian networks and infrastructure.

Mitigation Measures

MMC will mitigate site plan impacts to off-premise infrastructure in a manner proportionate to those impacts.

Neighborhood Integration and Neighborhood Engagement

In addition to the required neighborhood meeting as required by the Level III Site Plan process, MMC does the following in terms of neighborhood integration and neighborhood engagement:

- Monthly and as needed meetings with representatives of each of the neighborhood associations abutting the Bramhall Campus and Libbytown where MMC provides lunch;
- Targeted outreach to local businesses and residents;
- Open meetings where businesses and residents are invited to ask questions about the project and provide feedback;
- Provide mitigation measures (such as parking) to anyone directly impacted by temporary street parking closures or traffic detours;
- A webpage where all project information is available; and
- A project alert notification system where people can be updated via email or text of project updates.

Construction Management

A Construction Management Plan (CMP) that conforms to all IOZ requirements was provided to the City in its initial Site Plan application packet of materials on October 1, 2018. The CMP includes a construction schedule, and strategies for managing communication, noise, air quality, traffic, and parking impacts associated with the construction.

Other Requirements

- **Helipad.** This standard does not apply to the proposed project.
- **Snow Ban Parking.** In accordance with the IOZ Regulatory Framework, MMC will make parking available to neighbors within the parking garage for a set timeframe during designated snow ban parking events.
- **Healthy Communities.** This standard does not apply to the proposed project.

EE

WRITTEN SUBMISSION 30 – VIEW CORRIDORS
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THERE ARE NO DESIGNATED VIEW CORRIDORS WITHIN THE PROJECT SITE.

WRITTEN SUBMISSION 05 – EXISTING &/OR PROPOSED EASEMENTS OR COVENANTS
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

A. UNDERGROUND ANCHOR SYSTEM EASEMENT RESERVED BY MMC IN CONVEYANCE TO CRESCENT HEIGHTS LLC IN DEED BOOK 26288 PAGE 49.
B. UTILITY/DRAINAGE EASEMENT FOR A DRAIN/SEWER PIPE FROM THE PROPERTY NOW OF CRESCENT HEIGHTS, LLC. FORMERLY AS DESCRIBED IN DEED BOOK 1938 PAGE 248 AND 1946 PAGE 370.
C. UTILITY EASEMENT: TO NET&T NEAR THE NORTHERLY CORNER OF THE PARKING GARAGE ON CONGRESS ST. PER DEED BOOK 8573 PAGE 121.
D. CERTIFICATE OF VARIANCE APPROVAL GRANTING RELIEF FROM SECTION 14-137(7) MAXIMUM STRUCTURE HEIGHT OF 45 FEET, DATED JUNE 25, 1996, AND RECORDED IN DEED BOOK 12629 PAGE 295.
E. SITE LOCATION OF DEVELOPMENT DEPARTMENT ORDER BY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION FOR MAINE MEDICAL CENTER, PER DEED BOOK 13919 PAGE 114.
F. UTILITY EASEMENT: MMC TO NET&T 6' X 8' NEAR GILMAN AND CONGRESS PER DEED BOOK 13027 PAGE 207.
G. AMENDMENT TO CITY CODE SEC. 14-49 (ZONING MAP AMENDMENT) RE: CONDITIONAL REZONING FOR PROPERTY IN VICINITY OF WESTERN PROMENADE/MAINE MEDICAL CENTER. DATED MAY 24, 2005 AND RECORDED IN DEED BOOK 22671 PAGE 60.

FF

WRITTEN SUBMISSION 31 – HISTORIC RESOURCES
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THIS SUBMISSION ITEM IS NOT APPLICABLE TO THIS APPLICATION.

WRITTEN SUBMISSION 06 – WAIVER REQUESTS
BRAMHALL ST. -22; MMC CONGRESS STREET BUILDING

1. WAIVER REQUESTS INCLUDE :
   A) REDUCTION IN DRIVE AISLE FROM 24 FEET TO 21' – 9" ON THE RAMP BETWEEN THE NEW DROP OFF PLAZA AND THE ENTRANCE TO THE VISITOR GARAGE. THIS REQUEST IS BASED ON EXISTING FOUNDATIONS AND GRADE BEAMS AT THE VISITOR GARAGE.
   B) SIDEWALK MATERIAL CHANGE FROM BRICK PAVERS TO BROOM FINISH CONCRETE WITH SAW CUT SCORE JOINTS. THIS REQUEST IS BASED ON THE SLIPPERY NATURE OF BRICK PAVERS, SMOOTHNESS OF THE WALKING SURFACE, AND AVOIDING A MATERIAL CHANGE FROM THE PUBLIC RIGHT OF WAY SIDEWALK TO THE IMMEDIATELY ADJACENT PLAZA AREA.
   C) STAFF HAS SUGGESTED ADDING A SIDEWALK ON THE EAST SIDE OF GILMAN STREET FROM THE EMPLOYEE ENTRANCE TO THE CORNER OF GILMAN STREET AND A STREET, TO FACILITATE PEDESTRIAN ACCESS TO THE ST. JOHN STREET GARAGE. MMC SUPPORTS THIS CONNECTIVITY, HOWEVER, REQUESTS A WAIVER TO CONSTRUCT THIS SECTION OF SIDEWALK.
   PER LAND USE CODE SECTION 14- 506, THE PLANNING BOARD CAN GRANT SUCH A WAIVER IF TWO OR MORE OF THE SIX CONDITIONS EXIST AS SET FORTH IN SECTION 14-506. WE BELIEVE THAT WE MEET THE FOLLOWING TWO CONDITIONS :

- A SAFE ALTERNATIVE WALKING ROUTE IS REASONABLY AND SAFELY AVAILABLE, FOR EXAMPLE, BY WAY OF A SIDEWALK ON THE OTHER SIDE OF THE STREET THAT IS LIGHTLY TRAVELLED.

  As depicted on the attached photo, there is a lightly travelled sidewalk, in good condition, on the west side of Gilman Street. Employees can easily access this sidewalk via a crosswalk in close proximity to the staff entrance.

- STRICT ADHERENCE TO THE SIDEWALK REQUIREMENT WOULD RESULT IN THE LOSS OF SIGNIFICANT SITE FEATURES RELATED TO LANDSCAPING OR TOPOGRAPHY THAT ARE DEEMED TO BE OF A GREATER PUBLIC VALUE.

  As depicted on the second photo, construction of the sidewalk along the front of the Central Utility Plant would require the removal of existing fir trees in that location. These trees were very important to the Planning Board and the residents of Gilman Street when Site Plan Approval was granted for the Central Utility Plant. MMC feels that these tress are of greater public value than a sidewalk in this location.

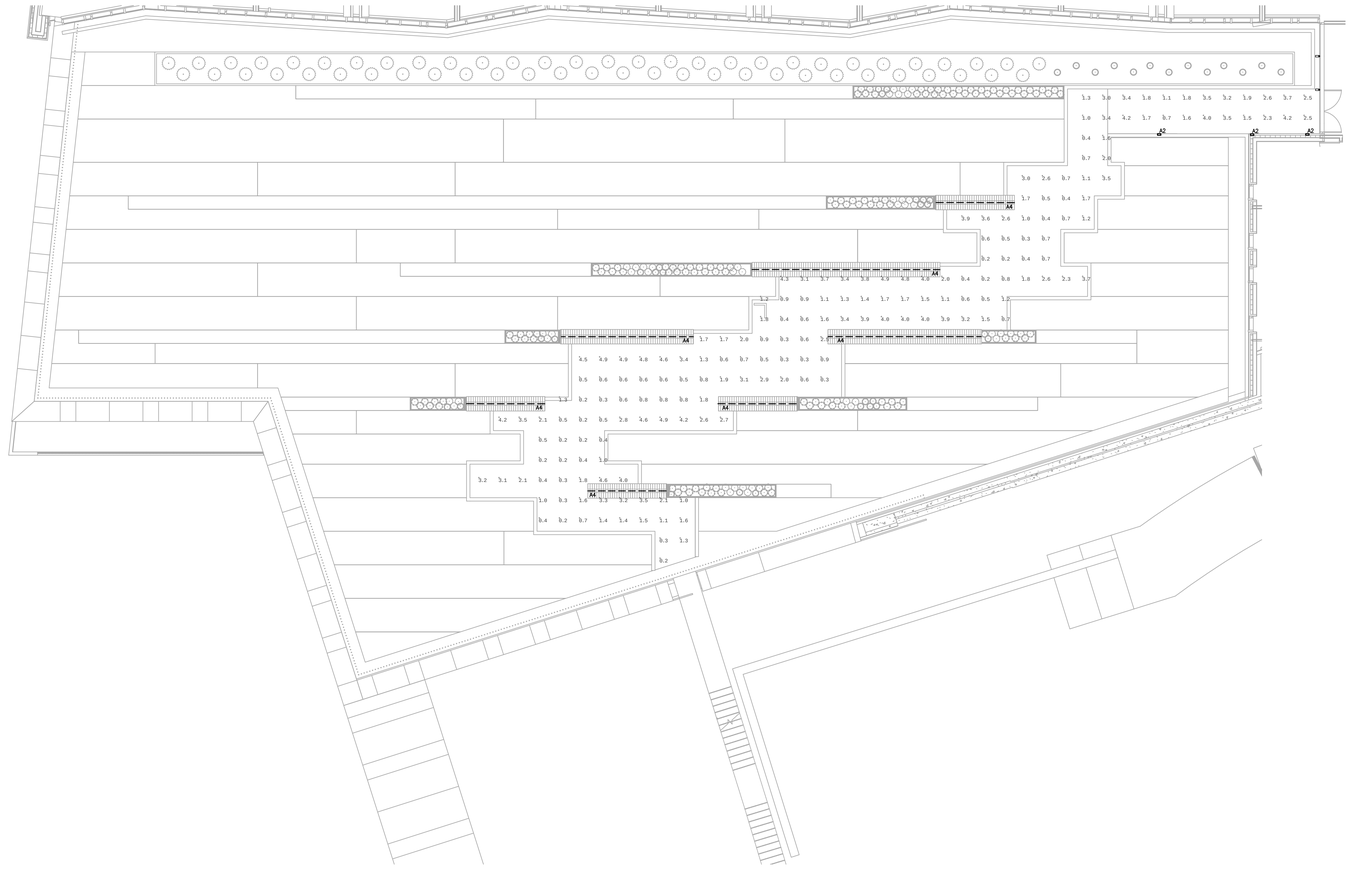

safe alternative
walking route


fir trees that would have to be removed to add a sidewalk

GG

A1	STREET PEDESTRIAN LIGHTING POLE - CITY OF PORTLAND, MAINE	HALOPHANE PEDESTRIAM ESPLANADE SERIES
A2	RECESSED LINEAR WALL MOUNTED FIXTURE	BEGA 33054
A3	LINEAR COVE MOUNTED FIXTURE IN PERFORATED CEILING	LUMENPULSE LUMENFACADE
A4	LINEAR LED TAPE LIGHT IN CHANNEL BELOW BENCH SEATING	LED LINEAR, ADONIS HYDRA WHITE

Illuminance (Fc)
Average = 1.84
Maximum = 4.9
Minimum = 0.2



1 LEVEL 3 TERRACE (GARDEN ROOF)
SCALE: 1/8"=1'-0"

PERKINS
+WILL
225 Franklin Street, Suite 1100
Boston, MA 02110
t 617.478.0300
f 617.478.0321
www.perkinswill.com

CONSULTANTS

CIVIL/ LANDSCAPE ARCHITECT
Segabo Technics
75 John Roberts Road , Suite 1A, South
Portland, ME 04106

STRUCTURAL ENGINEER/ BUILDING ENVELOPE
Simpson Gumpertz & Heger Inc.
41 Seyon Street, Building 1, Suite 500, Waltham,
Massachusetts 02453

MEP/FP ENGINEER/ CODE
AKF Group LLC
99 Bedford Street, 2nd Floor, Boston MA 02111

LIGHTING CONSULTANT
Lightcraft
99 Bedford Street, 2nd Floor, Boston MA 02111

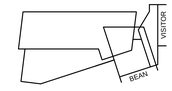
PROJECT

Congress St.
22 Bramhall St.
Portland, ME 04102

Maine Medical Center
MaineHealth

Maine Medical Center
22 Bramhall St.
Portland, ME 04102

KEYPLAN



ISSUE CHART

Exterior Photometric Submission to the City of Portland Maine
10.30.2018

ISSUE	DATE
Job Number	B160234.000
Drawn	
Checked	
Approved	

TITLE

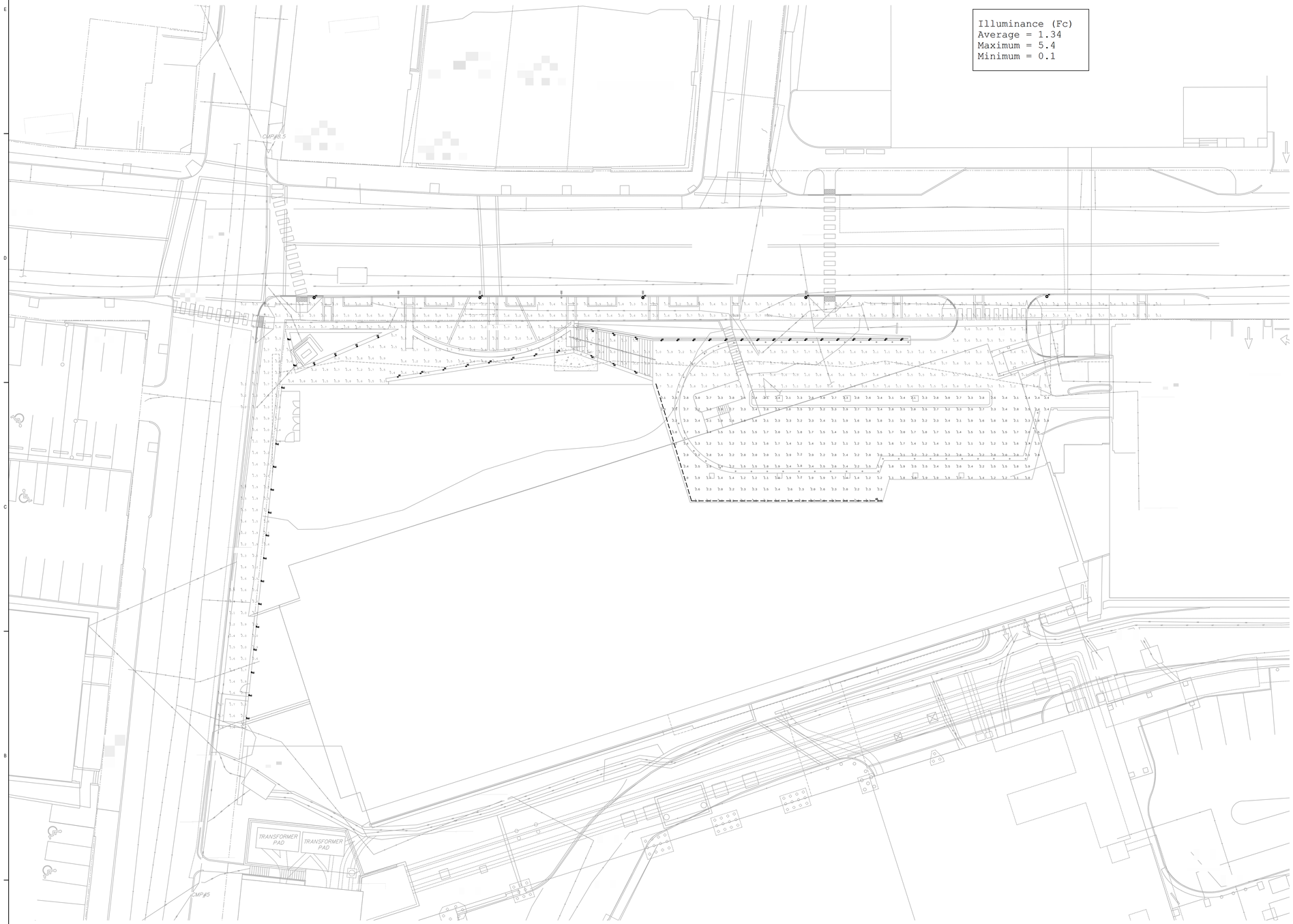
PHOTOMETRIC LEVEL 3 TERRACE ROOF GARDEN

SHEET NUMBER

L-200

A1	STREET PEDESTRIAN LIGHTING POLE - CITY OF PORTLAND, MAINE	HALOPHANE PEDESTRIAM ESPLANADE SERIES
A2	RECESSED LINEAR WALL MOUNTED FIXTURE	BEGA 33054
A3	LINEAR COVE MOUNTED FIXTURE IN PERFORATED CEILING	LUMENPULSE LUMENFACADE
A4	LINEAR LED TAPE LIGHT IN CHANNEL BELOW BENCH SEATING	LED LINEAR, ADONIS HYDRA WHITE

Illuminance (Fc)
Average = 1.34
Maximum = 5.4
Minimum = 0.1



1 EXTERIOR SITE PLAN
SCALE: 1/16"=1'-0"

PERKINS
+WILL
225 Franklin Street, Suite 1100
Boston, MA 02110
t 617.478.0300
f 617.478.0321
www.perkinswill.com

CONSULTANTS

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75 John Roberts Road , Suite 1A, South Portland, ME 04106

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MEPFP ENGINEER/ CODE
AKF Group LLC
99 Bedford Street, 2nd Floor, Boston MA 02111

LIGHTING CONSULTANT
Lightcraft
99 Bedford Street, 2nd Floor, Boston MA 02111

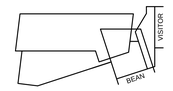
PROJECT

Congress St.
22 Bramhall St.
Portland, ME 04102

Maine Medical Center
MaineHealth

Maine Medical Center
22 Bramhall St.
Portland, ME 04102

KEYPLAN



ISSUE CHART

Exterior Photometric Submission to the City of Portland Maine
10.30.2018

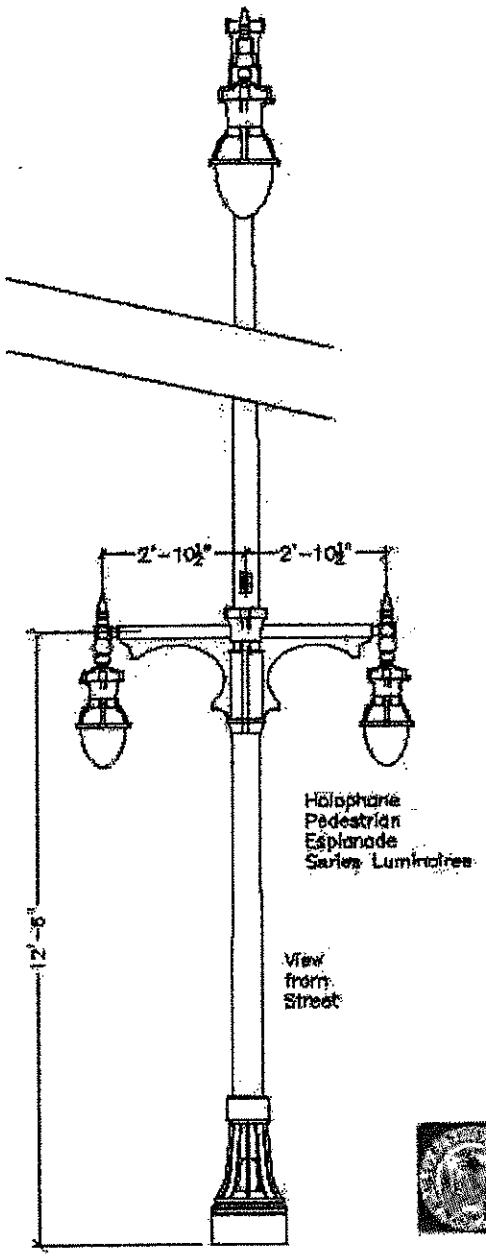
ISSUE	DATE
Job Number	B160234-000
Drawn	
Checked	
Approved	

TITLE

PHOTOMETRIC

SHEET NUMBER

L-100



APPLICATION
Street/Sidewalk lighting for two-way streets with parking on both sides.
Suggested layout:
90–100 ft on center (one side only)
175–225 ft on center (staggered pattern both sides)

72' OK as long as maximum fc is not exceeded.

City of Portland, Maine
Street & Sidewalk Lighting
CONGRESS STREET DISTRICT
Street/Pedestrian Lighting Pole
Sheet 8 of 8 08/05/97

Fixture A1

Type:
BEGA Product:
Project:
Modified: Fixture A2

Application
LED recessed wall luminaire with asymmetrical light distribution for the illumination of ground surfaces, building entrances, stairs and footpaths.

Materials
Luminaire housing and faceplate constructed of die-cast aluminum marine grade, copper free (≤0.3% copper content) A360.0 aluminum alloy
Clear safety glass
Silicone applied robotically to casting, plasma treated for increased adhesion
High temperature silicone gasket
Mechanically captive stainless steel fasteners
Stainless steel screw clamps
Composite installation housing

NRTL listed to North American Standards, suitable for wet locations
Protection class IP65
Weight: 1.8 lbs

Electrical

Operating voltage	120-277V AC
Minimum start temperature	-40° C
LED module wattage	5.9W
System wattage	8.0W
Controlability	0-10V, TRIAC, and ELV dimmable
Color rendering index	Ra≥80
Luminaire lumens	342 lumens (3000K)
Lifetime at Ta=15°C	>500,000 h (L70)
Lifetime at Ta=35°C	185,000 h (L70)

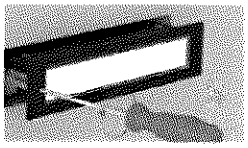
LED color temperature

2700K - Product number + **K27**
3000K - Product number + **K3**
3500K - Product number + **K35**
4000K - Product number + **K4**

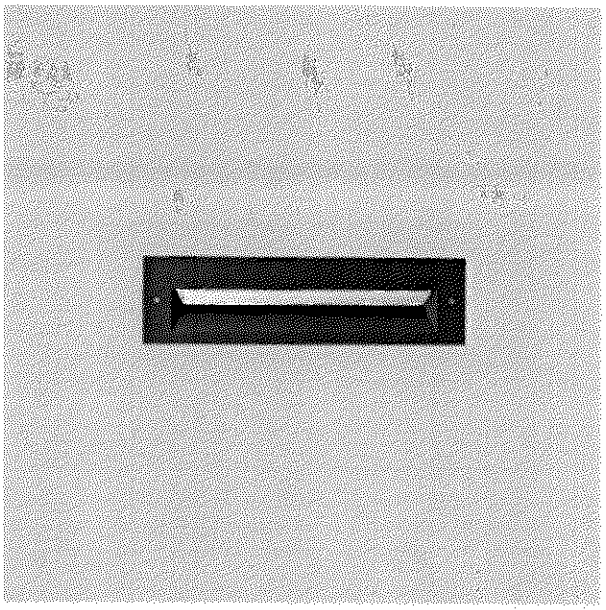
BEGA can supply you with suitable LED replacement modules for up to 20 years after the purchase of LED luminaires - see website for details

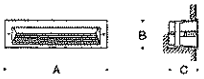
Finish
All BEGA standard finishes are matte, textured polyester powder coat with minimum 3 mil thickness.

Available colors	Black (BLK)	White (WHT)	RAL:
	Bronze (BRZ)	Silver (SLV)	CUS:



Fully enclosed luminaire with installation housing ensures seamless integration and weathertight operation.





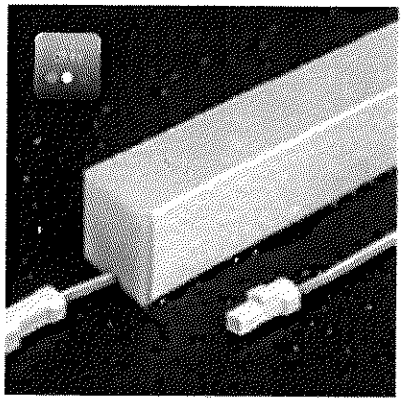
LED recessed wall luminaires asymmetrical

	LED	A	B	C
33054	5.9W	10⅛	2¾	5

BEGA 1000 BEGA Way, Carpinteria, CA 93013 (805) 684-0533 info@bega-us.com

Due to the dynamic nature of lighting products and the associated technologies, luminaire data on this sheet is subject to change at the discretion of BEGA North America. For the most current technical data, please refer to bega-us.com
© copyright BEGA 2018

ADONIS HYDRA White IP67



24 V, IP67 protected and IK10 certified, linear LED luminaire with small form factor and opal encapsulation with a homogeneous light emission. "One Bin Only" within 3 MacAdam guarantees constant color temperature and high light quality with a lifetime of > 60,000 hrs (L80/B10). It is IP67 protected against water, salt water, solvents and UV radiation by an opal polyurethane encapsulation. Furthermore, it is IK10 certified and therefore particularly robust against environmental impacts. It is available in 5 standard lengths and is supplied ready to plug in with a IP67 mini-connector. Engineered in Germany.

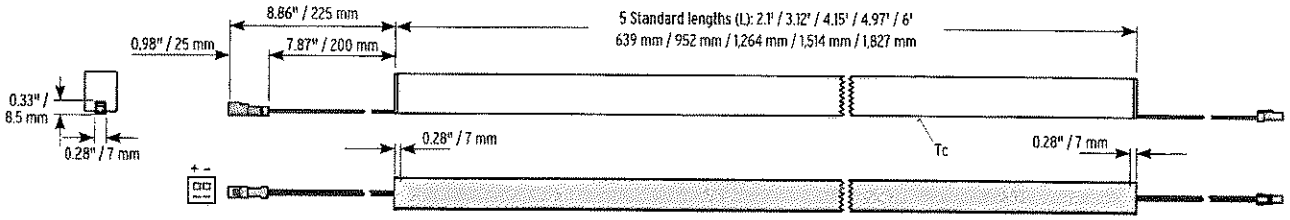
Fixture A3

Project name

Fixture type | Phase

Specifier | Date

Dimensions & available lengths



Opal encapsulated LED light line
Finish: White powder coated

Tc-point (Case temp.) on the rear side of the module

Electrical & output data

Voltage	24 Volt (23 V_{min}, 25 V_{max})
Temperature[2]	Tc_{min} = -13°F / -25°C, Tc_{max} (Table below)
Storage temperature	Ts_{min} = -22°F / -30°C, Ts_{max} = 185°F / 85°C
Ambient temperature	Ta_{min} = -13°F / -25°C, Ta_{max} = 104°F / 40°C
CRI	up to 95
R9	up to 65

ADONIS HYDRA	HD6	HD10	HD15	HD25
Power (W/ft / W/m)[1]	1.8 / 6	3.1 / 10	4.6 / 15	7.6 / 25
Efficacy (lm / W)[1] @ W850	62	62	67	65
max. serial run length (ft / m)	16.4 / 5	16.4 / 5	13.1 / 4	9.8 / 3
Temperature Tc-point (Tc_{max})[2]	158°F / 70°C	158°F / 70°C	158°F / 70°C	167°F / 75°C

Color temperature LED tape used[3]			Color temperature delivered finished fixture		HD6 low output	HD10	HD15	HD25 high output
					lumen/feet (lm/ft)[1] lumen/meter (lm/m)[1]			
W820		2000 K	2400 K		66 / 220	109 / 360	176 / 580	286 / 940
W822		2200 K	2700 K		75 / 250	124 / 410	200 / 660	325 / 1070
W825		2500 K	3000 K		84 / 280	142 / 470	228 / 750	374 / 1230
W827	W927	2700 K	3500 K	3400 K	75 / [illegible]	127 / [illegible]	243 / 800	395 / 1300
W830	W930	3000 K	3900 K	3800 K	78 / [illegible]	130 / [illegible]	258 / 850	420 / 1380
W835	W935	3500 K	4600 K	4400 K	78 / [illegible]	133 / [illegible]	270 / 890	441 / 1450
W840	W940	4000 K	5500 K	5600 K	81 / [illegible]	136 / [illegible]	276 / 910	450 / 1480
W850		5000 K	7200 K		112 / 370	188 / 620	304 / 1000	493 / 1620

ONE BIN ONLY

Lifetime
L80/B10 > 60,000 h

LM 79 compliant

LM 80 compliant

UV protected

Resistant to solvents

Saltwater resistant

Temporary immersion protection

Impact resistant (suitable for walk over)

[1] The given data are typical values. Due to tolerances of the production process and the electrical components, values for light output and electrical power can vary up to 10%.

[2] The Tc-point should be measured in thermal equilibrium according to IEC EN 60598-1.

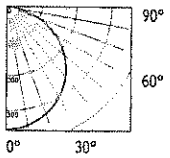
[3] In case of IP67 products, tolerances in the color temperature can occur. For further explantation, please see specification catalogue 2016/2017.

Safety and assembly information please see specification catalogue 2016/2017.

Order code

Please click here to configure your fixture online

Your order code	ADONIS HYDRA	HD__	W_	__	____	IP67
Order code example	ADONIS HYDRA	HD10	W9	27	1514	IP67



DIN 5040:A40
cd/1.000 lumen
C0/C180 ——
C90/C270 •••••••

LED tape
HYDRA HD6 ..... HD6
HYDRA HD10 ..... HD10
HYDRA HD15 ..... HD15
HYDRA HD25 ..... HD25

Color rendering
> 80 8
> 90 (only HD6, HD10) 9

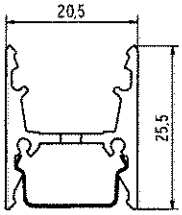
Color temperature delivered finished fixture	Color temperature LED tape used	
2400 K	2000 K	20
2700 K	2200 K	22
3000 K	2500 K	25
3500 K 3400 K	2700 K	27
3900 K 3800 K	3000 K	30
4600 K 4400 K	3500 K	35
5500 K 5600 K	4000 K	40
7200 K	5000 K	50

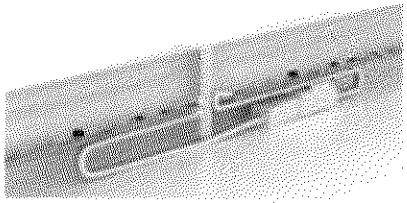
Length
2.1' (639 mm) (2 clips recommended) 0639
3.12' (952 mm) (2 clips recommended) 0952
4.15' (1,264 mm) (3 clips recommended) 1264
4.97' (1,514 mm) (3 clips recommended) 1514
6' (1,827 mm) (4 clips recommended) 1827

Ingress protection
IP67 ..... IP67

Please choose your accessories

Mounting	Art.-#
☐ Mounting clip for VarioContour 010 (required every 1.31' / 40 cm)	13000104
☐ Contour 010 Adjustable Wall Mount Set	13000165
☐ Mounting Lock[4] (for vertical mounting)	13000192





Easy and clean installation due to internal mounting clips. ADONIS / KALYPSO H-channel also acts as cable raceway. Therefore you do not see any clips or cables from the outside.

[4] The mounting lock is used to fix the sliding mounting clips, thus allowing a vertical wall mounting.

[5] Required for IP67 connector sealing at end of runs.

Extensions / Jumpers (optional)	Art.-#
☐ VarioCon Female Mini 2 x 0.0005 sqin / 0.34 mm² 6.56' / 2 m IP67	15000142
☐ VarioCon Extension Mini 2 x 0.0005 sqin / 0.34 mm² 0.33' / 0.1 m IP67	15000143
☐ VarioCon Female Mini Protection Cap Mono IP67[5]	15000218

Recommended driver

☐ MEAN WELL HLG-100H-24A

Recommended control

☐ EldoLED LINEARdrive DC 180D

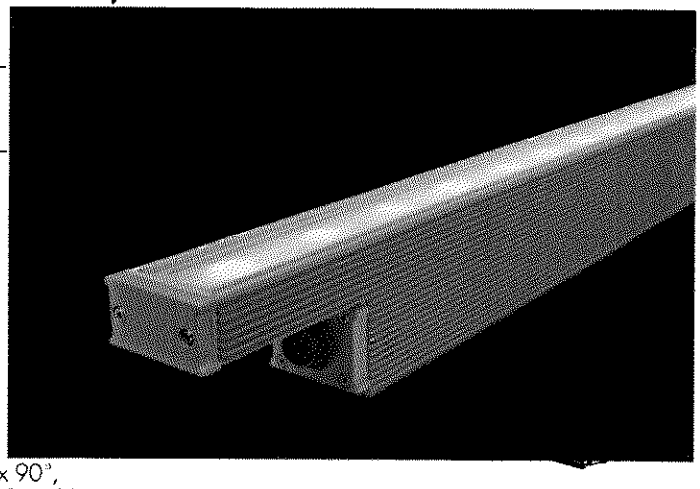
For further driver options including LUTRON click here.

Specification Sheet

lumenfacade™

WHITE & STATIC COLORS

Fixture A4



Client _____

Order#_____ **Type** _____

FEATURES AND BENEFITS

Physical :

- Low copper content extruded aluminum housing
- Available in 1', 2', 3' or 4' sections
- Electro-statically applied polyester powder coat finish
- Machined aluminum end caps and silicone gaskets
- Stainless steel hardware
- Clear tempered glass lens
- Asymmetric wallwash, 8° x 8°, 10° x 10°, 10° x 30°, 10° x 60°, 10° x 90°, 15° x 25°, 30° x 30°, 30° x 60°, 35° x 35°, 50° x 80°, 60° x 60°, 80° x 80°, or 90° x 90° optics
- IP66
- IK07 rated (asymmetric wallwash lens is IK06 rated)
- Meets 3G ANSI C136.31 Vibration standard for bridge applications
- Corrosion-resistant coating for hostile environments[2]

Performance :

- 2200K, 2700K, 3000K, 3500K, 4000K, Red, Green, Blue static colors available
- CRI value: 80+
- Minimum 1fc (10.7 lux) @ 140ft (43m) distance (HO 4000K, 4' unit, 10° x 60° optic)
- Lumen maintenance: 120,000 hrs [L70 @ 25°C]
- Lumen measurements comply with LM - 79 - 08 standard
- Resolution per foot or per fixture (configured with LumenID V3 software & DMX/RDM)
- Operating temperatures: -25° C to 50° C [-13F to 122F]

Electrical :

- Line voltage luminaire for 100 to 277V
- Power and data in 1 cable (#16-5)
- End-to-end option (ETE): 16" black input cable, no jumper cable needed
- 252ft [77m] maximum cable and fixture run length, non-dimming, 277V, RO version
- 164ft [50m] maximum cable and fixture run length, non-dimming, 277V, HO version
- 5W/ft version meets ASHRAE standards for linear lighting on building facades[3]
- 8.5W/ft Regular Output version[3]
- 15.25W/ft High Output version[3]
- Dimming options: Lumentalk, 0-10 volt, DALI, Lutron® EcoSystem® or DMX/RDM enabled

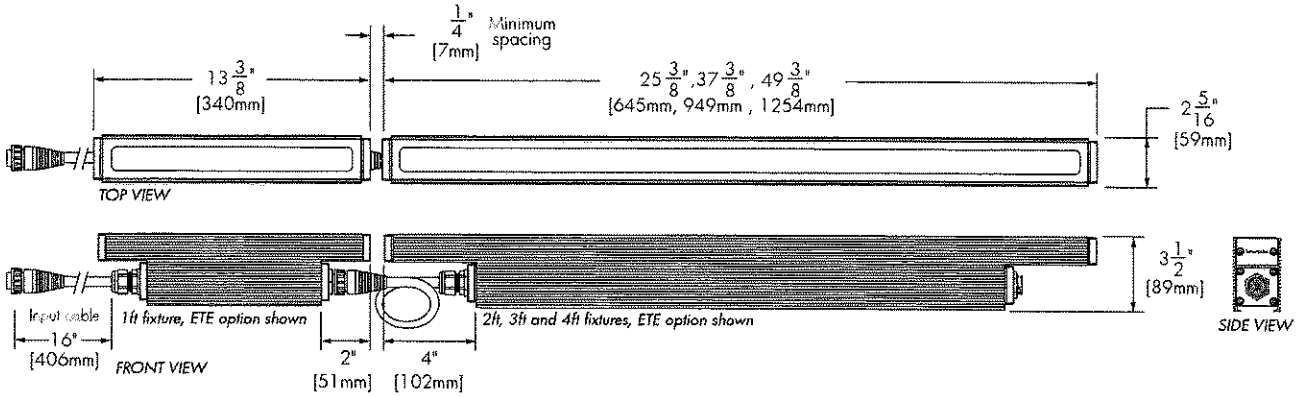
c UL us CE RoHS **IK07**[1]

lumentalk EcoSystem. Enabled

Photometric Summary

4ft HO, 4000K	Delivered Output [lm]	Intensity [peak cd]
WW	3,592	5,159
8°x8°	4,045	77,896
10°x10°	3,768*	38,346*
10°x30°	3,830	30,056
10°x60°	3,692	19,654
10°x90°	3,576	7,897
30°x30°	3,765	14,726
30°x60°	3,862*	5,119*
60°x60°	3,447*	3,015*
90°x90°	3,592	1,886

Photometric performance is measured in compliance with IESNA LM-79-08.
*Estimated. Consult Lumenpulse website for the latest IES and LDT files.



[1] Asymmetric wallwash lens is IK06 rated.
[2] Use only when exposed to salt spray and harsh chemicals. This option is not required for normal outdoor exposure!
[3] ASHRAE version not available for 1' fixture lengths. Power consumption is typically 20% higher for 1' fixture lengths.

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Specification Sheet

lumenfacade™

WHITE & STATIC COLORS

HOW TO ORDER

LOG Select:	Select:	Select:	Select:	Select:	Select:	Select:	Select:	Select:
1	2	3	4	5	6	7	8	9

1

Housing:

LOG ASHRAE - lumenfacade™, 5W/ft ASHRAE compliant[1]
LOG RO - lumenfacade™ Regular Output, 8.5W/ft
LOG HO - lumenfacade™ High Output, 15.25W/ft

2

Voltage:

100 - 100 volts
120 - 120 volts
208 - 208 volts
220 - 220 volts
240 - 240 volts
277 - 277 volts

3

Length:

12 - 13 3/8 inches (340mm) (2 kg/4.5 lbs)
24 - 25 3/8 inches (645mm) (3.17 kg/7 lbs)
36 - 37 3/8 inches (949mm) (4.75 kg/10.5 lbs)
48 - 49 3/8 inches (1254mm) (6.35 kg/14 lbs)

4

Colors and Color temperatures:

22K - 2200K
27K - 2700K
30K - 3000K
35K - 3500K
40K - 4000K
RD - Red
GR - Green
BL - Blue

Consult factory for availability of static Royal Blue, 6500K and 90+ CRI.

5

Optics:

Asymmetric

WWLF - Asymmetric Wallwash optic, left feed[2]
WWRF - Asymmetric Wallwash optic, right feed[2]

Symmetric

8x8 - 8° x 8°[3]
10x10 - 10° x 10°[3]
30x30 - 30° x 30°
35x35 - 35° x 35°
60x60 - 60° x 60°
80x80 - 80° x 80°
90x90 - 90° x 90°

Bi-symmetric

10x30 - 10° x 30°
10x60 - 10° x 60°
10x90 - 10° x 90°
15x25 - 15° x 25°
30x60 - 30° x 60°
50x80 - 50° x 80°

6

Mounting Option:

SAM - Slim Adjustable Mounting
UMP - Fixed Mounting[4]
UMAS - Universal Adjustable Mounting[4]
WAM2 - Adjustable Wall Mounting 2"
WAM6 - Adjustable Extended Arm Mounting 6"
WAM12 - Adjustable Extended Arm Mounting 12"
WAM18 - Adjustable Extended Arm Mounting 18"

7

Finish:

BK - Black Sandtex
BRZ - Bronze Sandtex
SI - Silver Sandtex
WH - Smooth white
CC - Custom color and finish (please specify RAL color)[5]

8

Control:

NO - No Dimming
LT - Lumentalk Dimming[6]
DIM - 0-10V Dimming option[7]
DALI - DALI Dimming option[8]
ES - Lutron® EcoSystem® Enabled Dimming[9]
DMX/RDM - DMX/RDM enabled[10]

9

Option:

ETE - End - to - end configuration, 16" black input cable, no jumper cable needed
CRC - Corrosion-resistant coating for hostile environments
3GV - 3G ANSI C136.31 Vibration Rating[11]
CE - CE (certification covers European Economic Area)

SPL - QUICK CONNECT

Notes:

[1] Not available for 1' [0.3m] fixture lengths. [2] Right feeding side is standard unless otherwise specified. [3] For best results use with HO fixtures at a 6-inch (15cm) setback from surface. Contact factory for application support. [4] Suitable to use when **3GV** option is specified. [5] North American RAL colors specified with RAL number only are provided with a smooth/high-gloss finish. Please consult factory for other RAL textures and glosses, or to match alternate color charts. Final color matching results may vary. [6] Lumentalk system is enabled with LDB accessory for 1' [0.3m] fixture lengths, see Typical Wiring Diagrams pages for details. 1% minimum dimming value. [7] 10% minimum dimming value. Current Sink: 3mA/fixture, Current Source: 0.5mA/fixture. [8] 1% minimum dimming value. 1 DALI address per fixture. [9] Available for 2' RO [0.6m], 3' [0.9m] and 4' [1.2m] fixture lengths only. 1% minimum dimming value. 1 EcoSystem® address per fixture length. [10] 1% minimum dimming value. Fixtures set to by fixture resolution. 1 DMX address per fixture. [11] Available with **UMP** and **UMAS** mounting options only.

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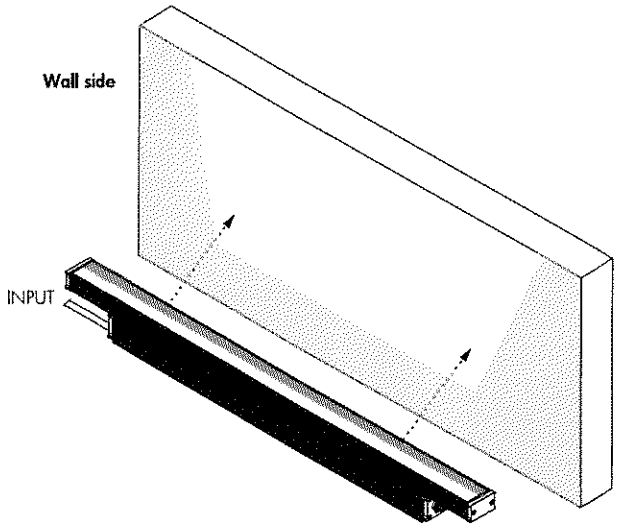
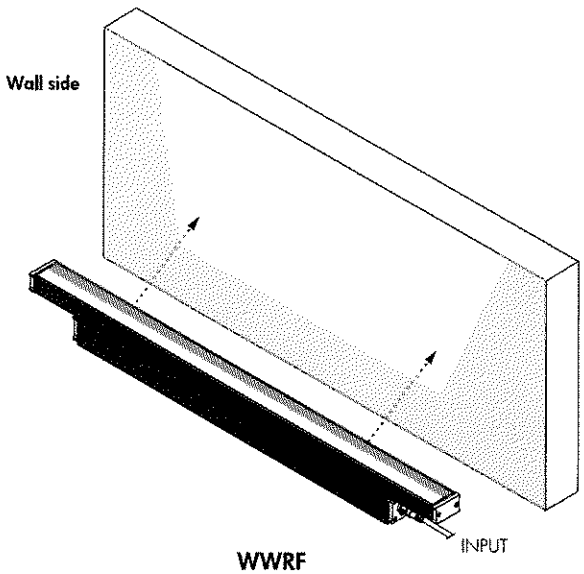
ASYMMETRIC WALLWASH OPTIC FEEDING SIDE DETAIL

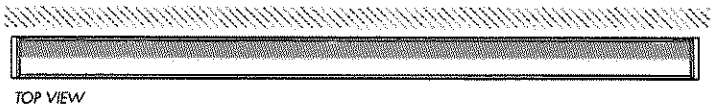


WWLF
Asymmetric Wallwash Optic, Left Feed

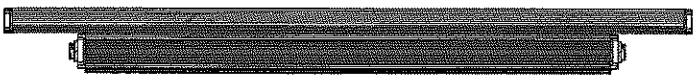


WWRF
Asymmetric Wallwash Optic, Right Feed

Always position frosted side toward the wall



TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW
(Fixture pointing upwards)

*Fixture's feeding side is based on uplight installations. Feeding sides are reversed when fixture is used in a downlight application.

Recommended setback from wall is 1/10 of the wall height.

Example: 2ft [0.6m] setback for a 20ft [6m] wall.

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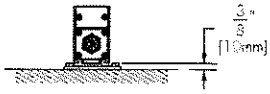
MOUNTING OPTIONS

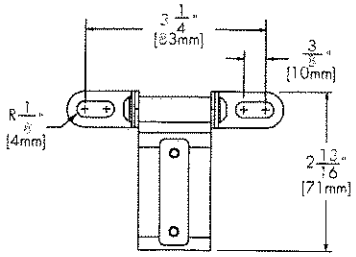
Surface Mount

SAM
Slim Adjustable Mounting



UMP
Fixed Mounting





SAM
Mounting Hole Pattern

Wall Mount

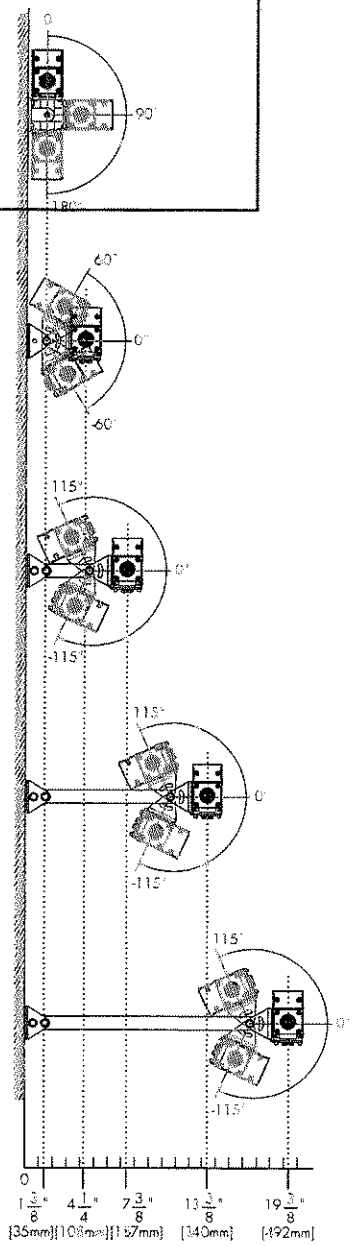
UMAS
Universal Adjustable Mounting

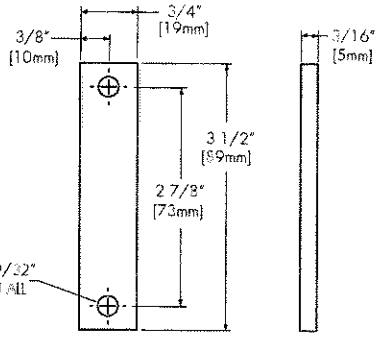
WAM2
Adjustable Wall Mounting 2"

WAM6
Adjustable Extended Arm Mounting 6"

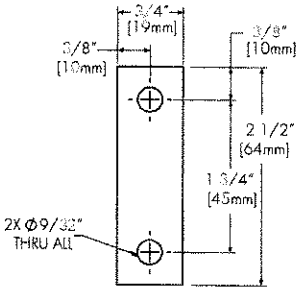
WAM12
Adjustable Extended Arm Mounting 12"

WAM18
Adjustable Extended Arm Mounting 18"

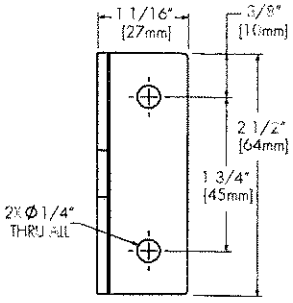




UMP
Mounting Hole Pattern



UMAS
Mounting Hole Pattern



WAM
Mounting Hole Pattern

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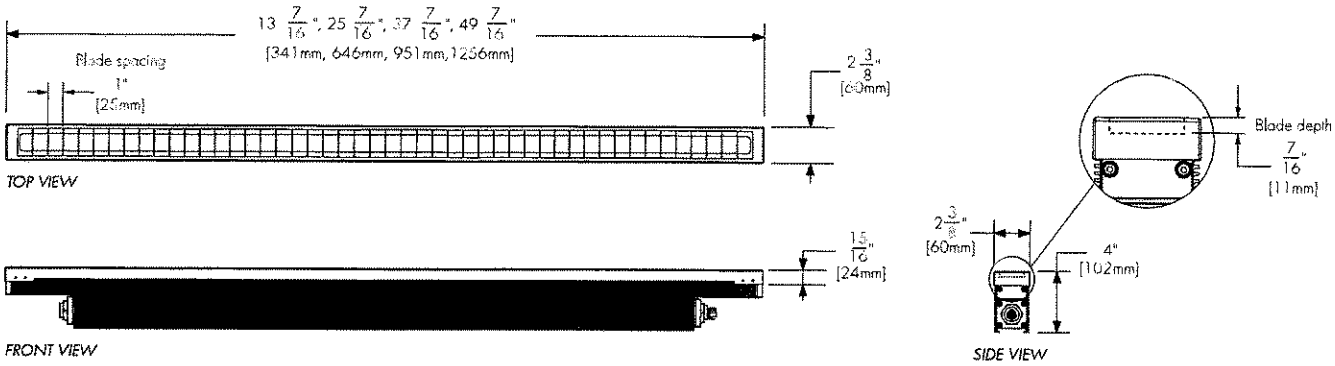
LOUVER ACCESSORY INSTALLATION DETAIL

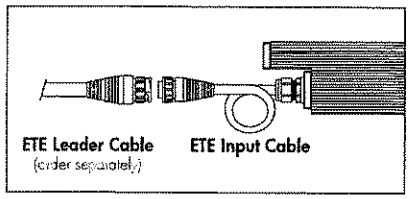
Not suitable for asymmetric wallwash optic



LOGRD
Radial Louver for Lumenfacade
(See page 6 for ordering code)

OPTION

ETE - End-to-end configuration, 16" black input cable, no jumper cable needed.



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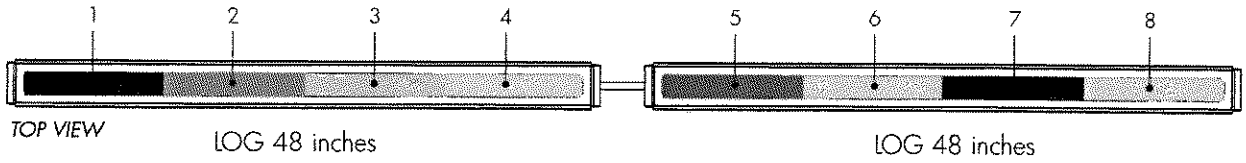
RESOLUTION DETAILS

Applicable for DMX/RDM control option only.
Fixture resolution can be configured on-site within the LumenID V3 software. A DMX/RDM enabled CBX is required.

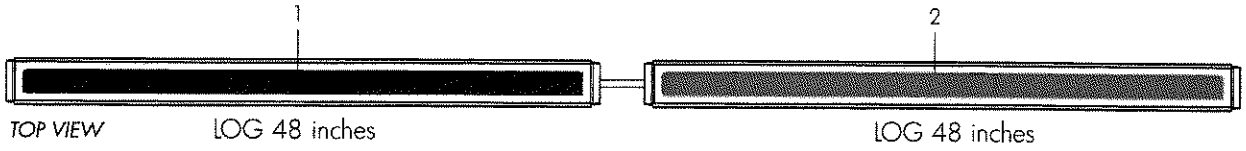
Resolution per foot: each foot is addressed independently

DMX ADDRESSES:



Resolution per fixture: each fixture is addressed independently

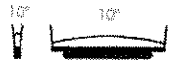
DMX ADDRESSES:



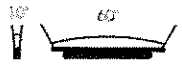
Optics:

10x10 - 10° x 10°

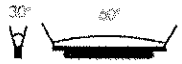
*For best results use with HO fixtures at a 6-inch (15cm) setback from surface. Contact factory for application support.



10x60 - 10° x 60°



30x60 - 30° x 60°



60x60 - 60° x 60°



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MAINE MEDICAL CENTER LEVEL III SITE PLAN APPLICATION H

CONGRESS ST PATIENT TOWER

EVIDENCE OF FINANCIAL & TECHINICAL CAPACITY

The health care landscape has been in a state of change, particularly since the signing of the Affordable Care Act (ACA). Given the recent changes in the executive and legislative branches of the federal government and continued references to "repealing" the ACA, it is nearly impossible to anticipate the scope of future changes. Maine Medical Center's strategic financial plan assumes continued market basket increases at or near 3% annually. Additionally, the strategic financial plan assumes the following:

- Little or no increase in Medicare or Medicaid payments
- Stable payer mix
- No expansion to the Medicaid program
- Achievement of operational efficiencies based on analyses of national benchmark data
- Stable utilization of hospital services
- Continuation of provider-based billing at existing locations
- Stable levels of bad debt and charity care

Minor changes in the law or regulatory environment impacting these assumptions will likely not jeopardize the overall strategic financial plan. Substantive changes, however, will need to be monitored closely to ensure support of the project.

MMC is fully licensed and accredited, and has been providing services of this scale and scope for years.

Through multiple building projects throughout the history of the organization, MMC has demonstrated its ability to develop new and renovated facilities that meet all licensure and accreditation requirements.

The proposed project's program, and design, developed by a team of health care architects and engineers, and hospital physicians and staff, are in conformance with Guidelines for Design and Construction of Health Care Facilities, 2006 Edition, Facilities Guidelines Institute, (American Institute of Architects, Washington, DC, 2006) as required by the State of Maine Department of Health and Human Services' Division of Licensing and Regulatory Services. In addition, the guidelines for Design and Construction of Health Care Facilities, 2014 Edition, Facilities Guidelines Institute, (American Institute of Architects, Washington, DC, 2014) were also used in the proposed project's design.

HH

WRITTEN SUBMISSION 33– NOISE AND VIBRATION
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THERE ARE SMALL HVAC UNITS PROPOSED ON THE ROOF OF THE HIGH PORTION OF THE BUILDING, HOWEVER, THERE ARE NO NEARBY ADJACENT PROPERTIES . MOST OF THE MECHANICAL, EQUIPMENT WILL BE LOCATED IN THE BASEMENT, AND PROPOSED AREAWAYS ARE LOCATED AT THE REAR OF THE BUILDING.

MAINE MEDICAL CENTER LEVEL III SITE PLAN APPLICATION

I

CONGRESS ST PATIENT TOWER

EVIDENCE OF FINANCIAL & TECHINICAL CAPACITY

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Maine Medical Center
Bramhall Campus Environmental Graphics & Wayfinding Program

II

Site Submission
11.27.18

Leverage/

Response to City Comments and Recommendations

We appreciate the comments and direction offered by the City and have considered them. We believe the designs put forth the best approach for patients and families visiting MMC. Our overall design approach includes:

- Using existing sign foundations and locations (where possible)
- A 15% reduction in sign sizes from the current design
- Reduction in overall quantity of signs from the current system
- Better alignment with the MMC brand and architectural enhancements

City Comments and Recommendations (received Thursday, September 6, 2018)

- No signs will be permitted on properties not owned by MMC (e.g. 1b)
- There are concerns about sight line obstructions on several of the signs, including ST.1a, CS.2 and EG.1a.
- Please provide a sight line analysis (Included)
- There are concerns about the size of the signs in general. Could those proposed as 11' in height be brought to a more pedestrian scale (e.g 8'?) There are particular concerns about the size of 4a, which is replacing a much smaller sign and 6a. Both of these signs should be brought to a pedestrian scale
- Eliminate one of the signs marked 5.b and reduce the size of the remaining to the scale of the existing sign
- Please indicate dimensions of CS.1 and method of illumination. At first blush, this sign appears out of scale.
- The layout of EG.1a is inconsistent with the other signs of similar purpose (e.g.ST.3a). Is there a reason for this?

Masterplan Overview

01 Main Campus Signage
02 Congress Street Building Signage
03 Employee Garage Signage



Architectural Colors







50 YEAR PALETTE

Use of natural materials take clues from nature to create a timeless environment.









Brand Colors



Maine Medical Center
MaineHealth

Typeface: Humanist

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890 !@#$%^&*()_+:”<>?

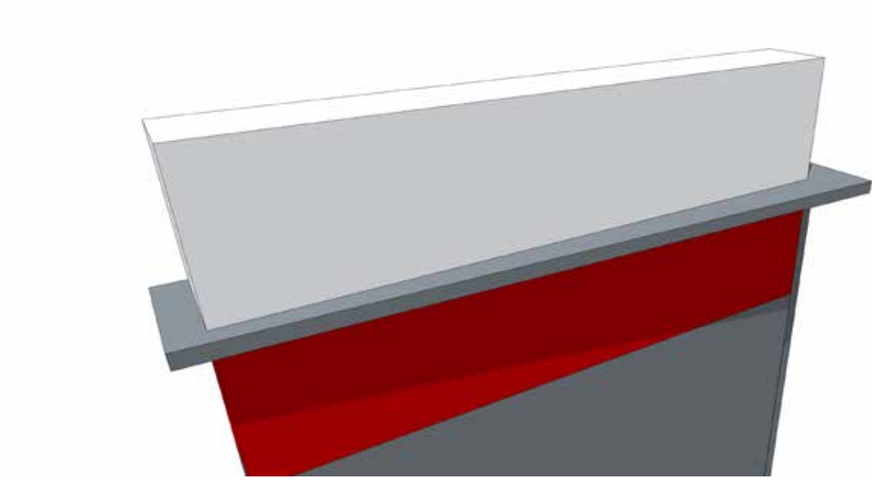
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890 !@#$%^&*()_+:”<>?

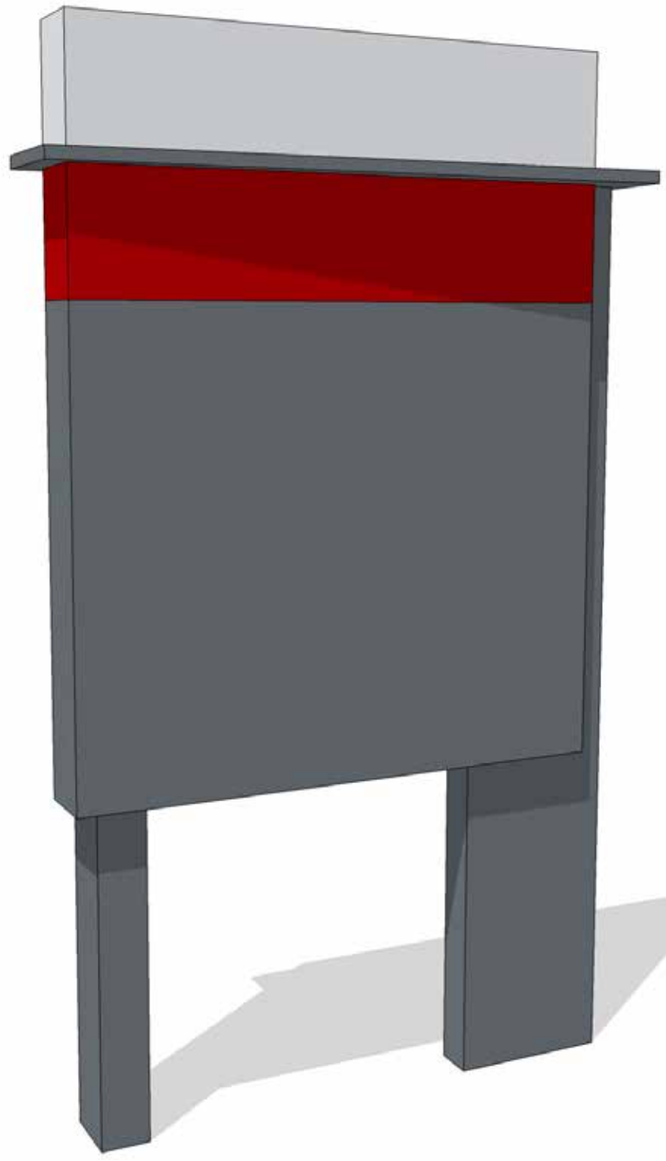
Typeface: Humanist Condensed

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
A b c d e f g h i j k l m n o p q r s t u v w x y z
1 2 3 4 5 6 7 8 9 0 ! @ # $ % ^ & * ( ) _ + { } : " < > ?

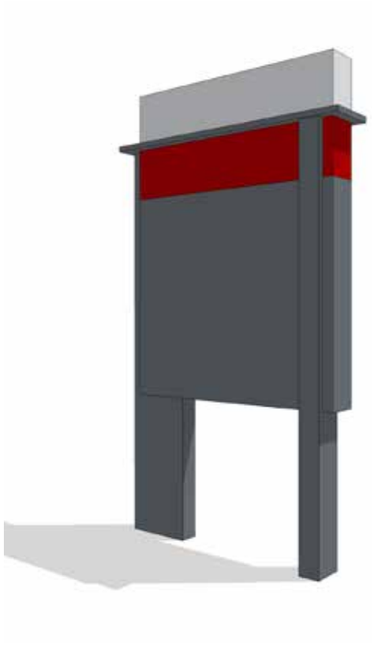
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
A b c d e f g h i j k l m n o p q r s t u v w x y z
1 2 3 4 5 6 7 8 9 0 ! @ # $ % ^ & * ( ) _ + { } : " < > ?

Design Approach









01

Main Campus Signage

Existing Signage

















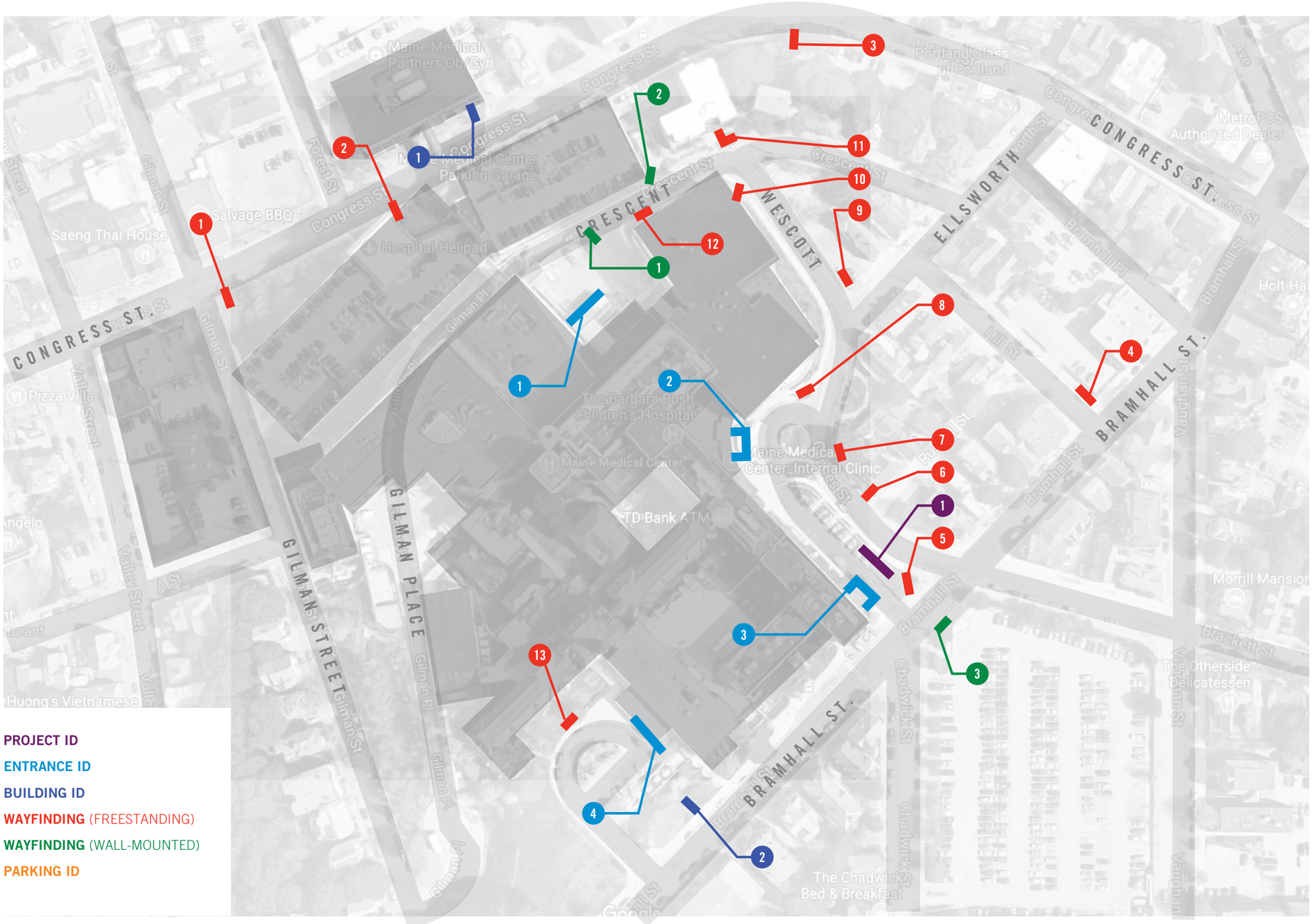




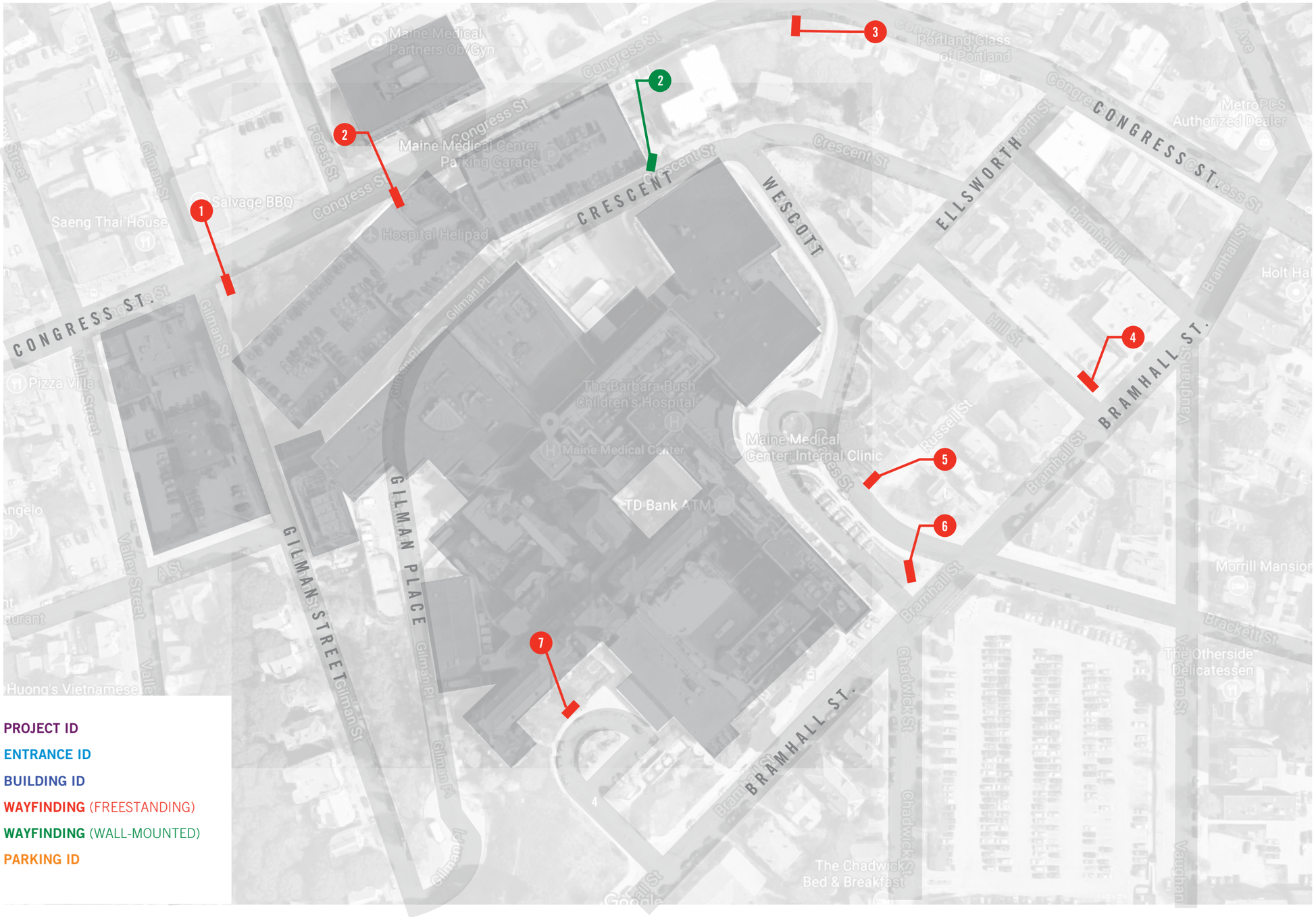




Existing Signage Location Plan



Demo Signage Elements



PROJECT ID

ENTRANCE ID

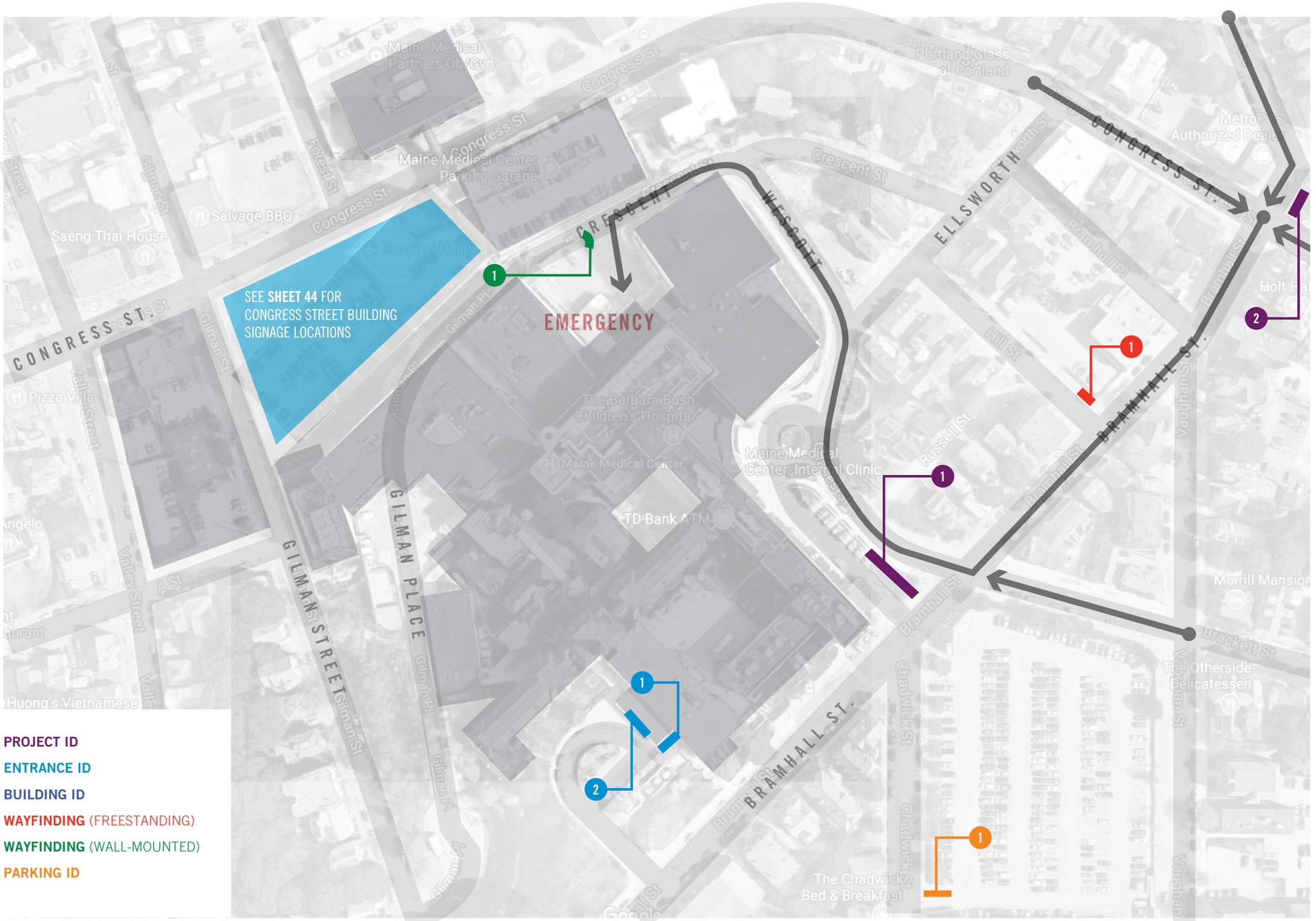
BUILDING ID

WAYFINDING (FREESTANDING)

WAYFINDING (WALL-MOUNTED)

PARKING ID

New Signage Elements



PROJECT ID

ENTRANCE ID

BUILDING ID

WAYFINDING (FREESTANDING)

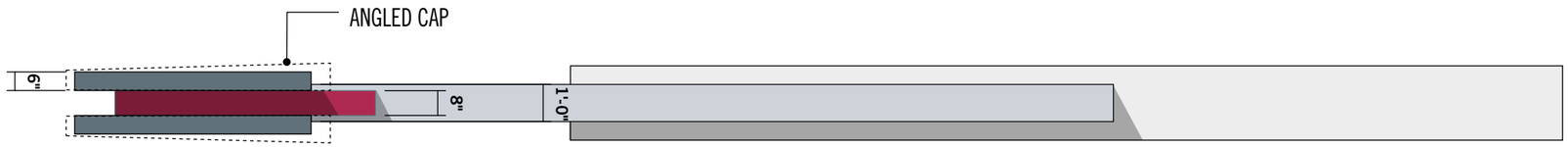
WAYFINDING (WALL-MOUNTED)

PARKING ID

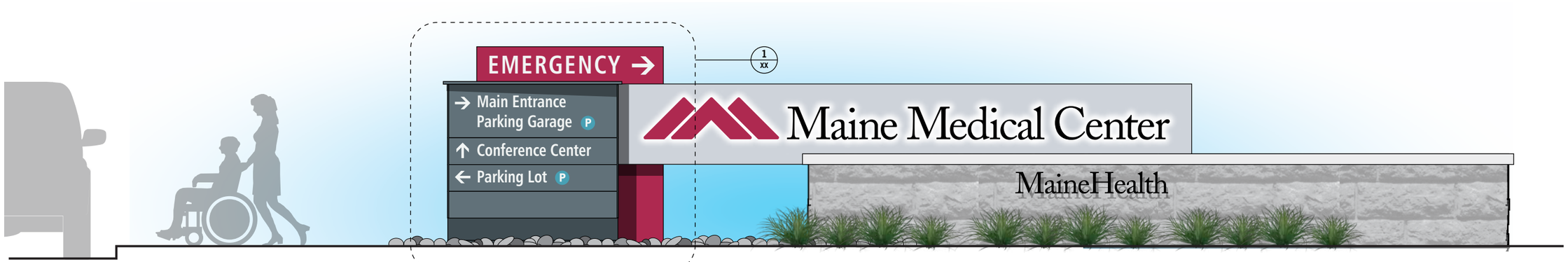
Preliminary Sign Location Plan



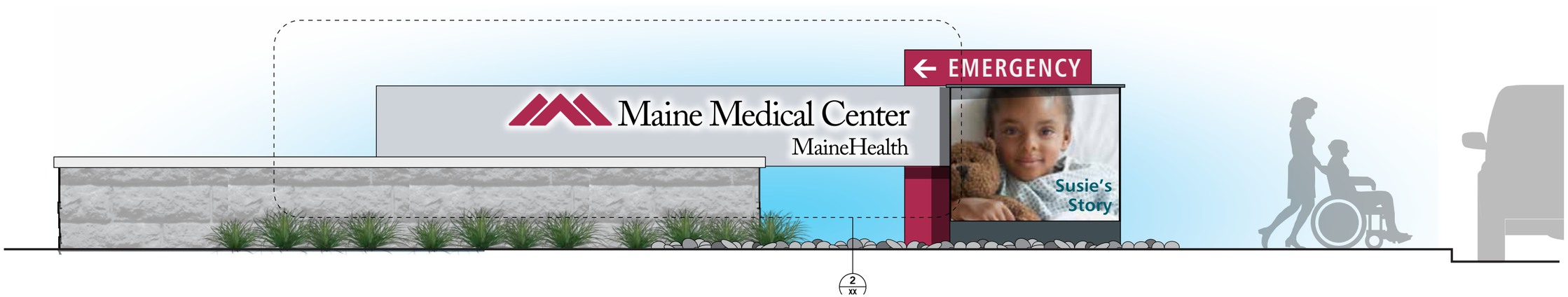
ST.1 Bramhall Gateway



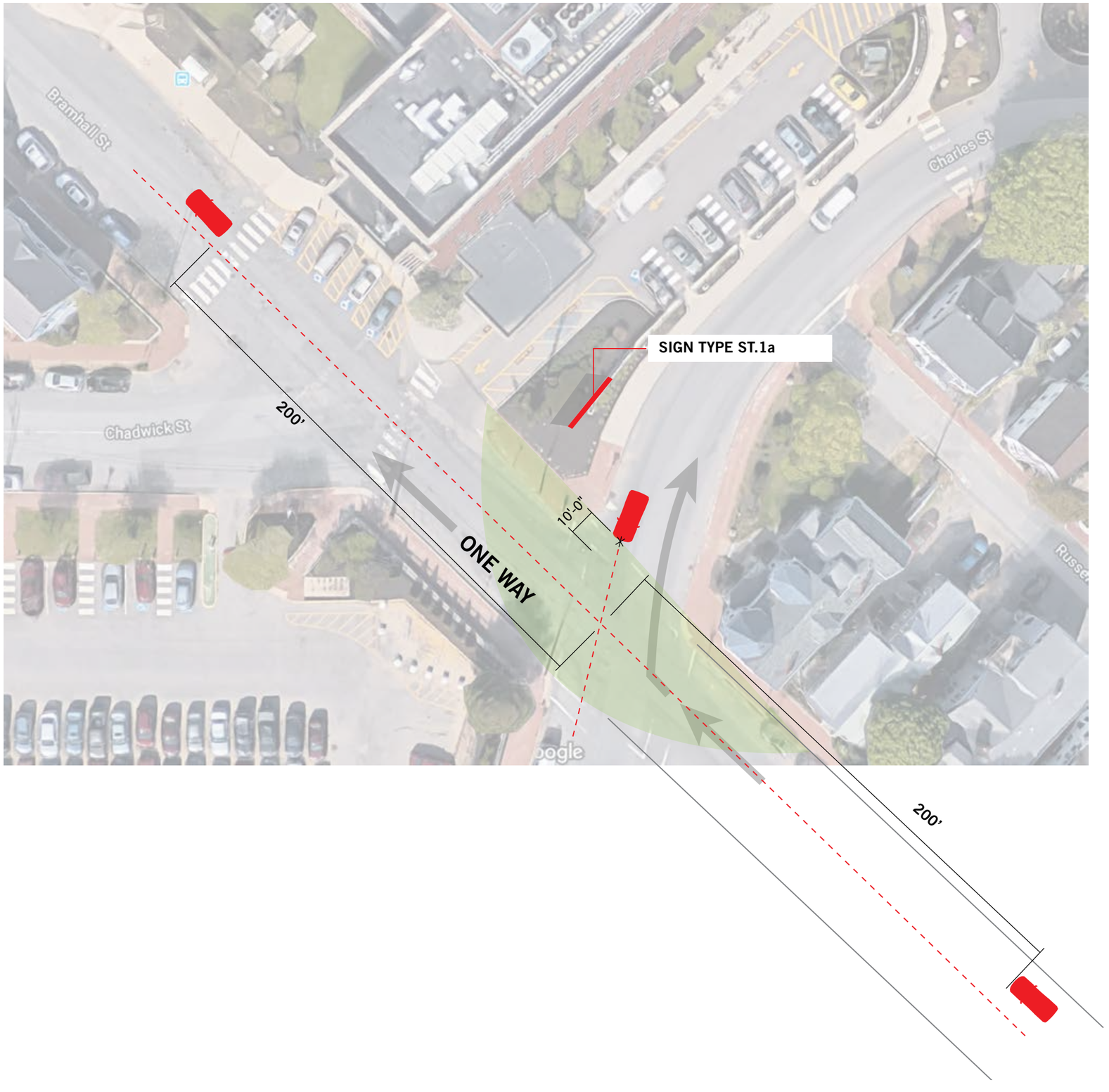
3 Plan
scale: 1/4" = 1' - 0"



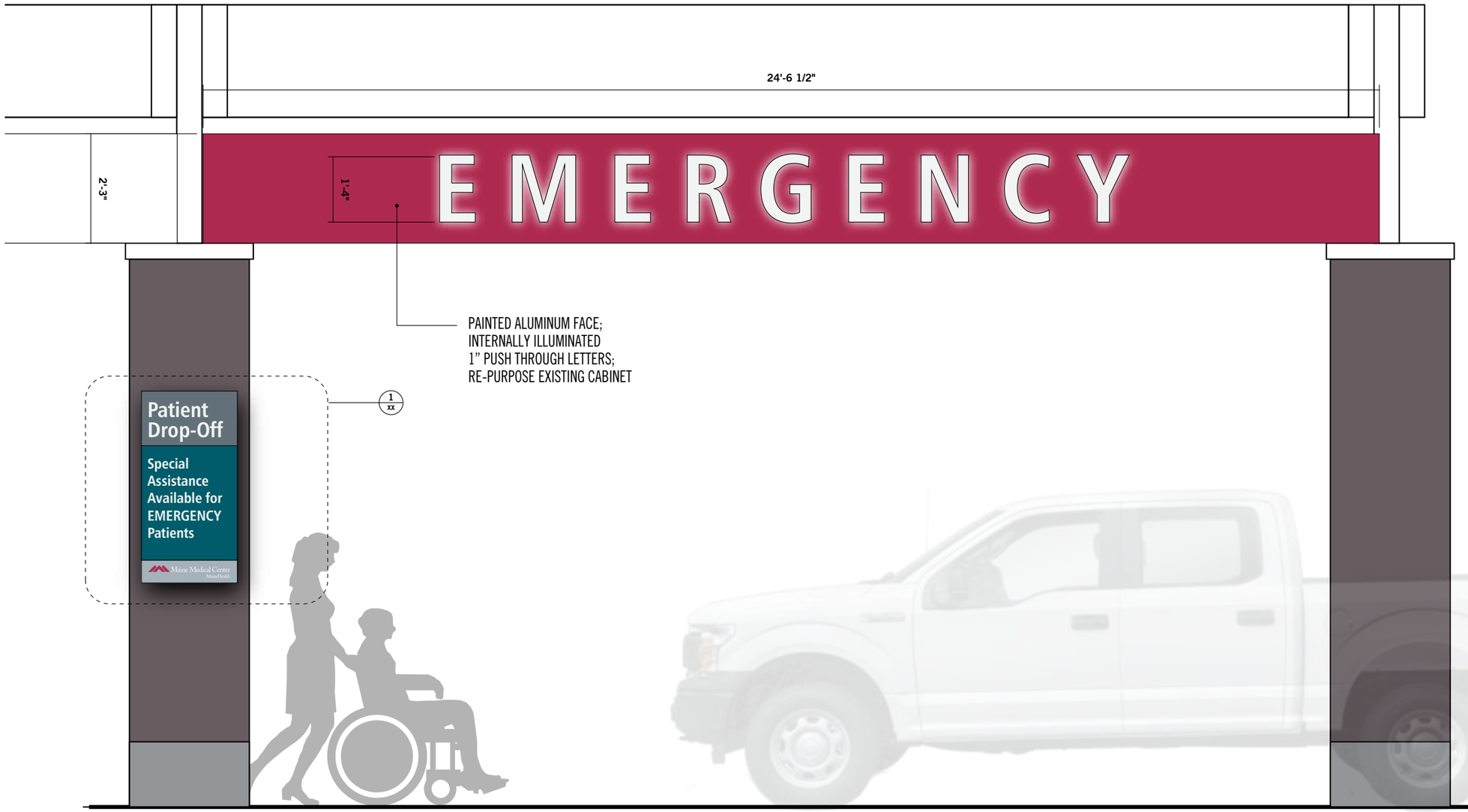
2 Elevation: Side A
scale: 1/4" = 1' - 0"



ST.1 Site Line Analysis

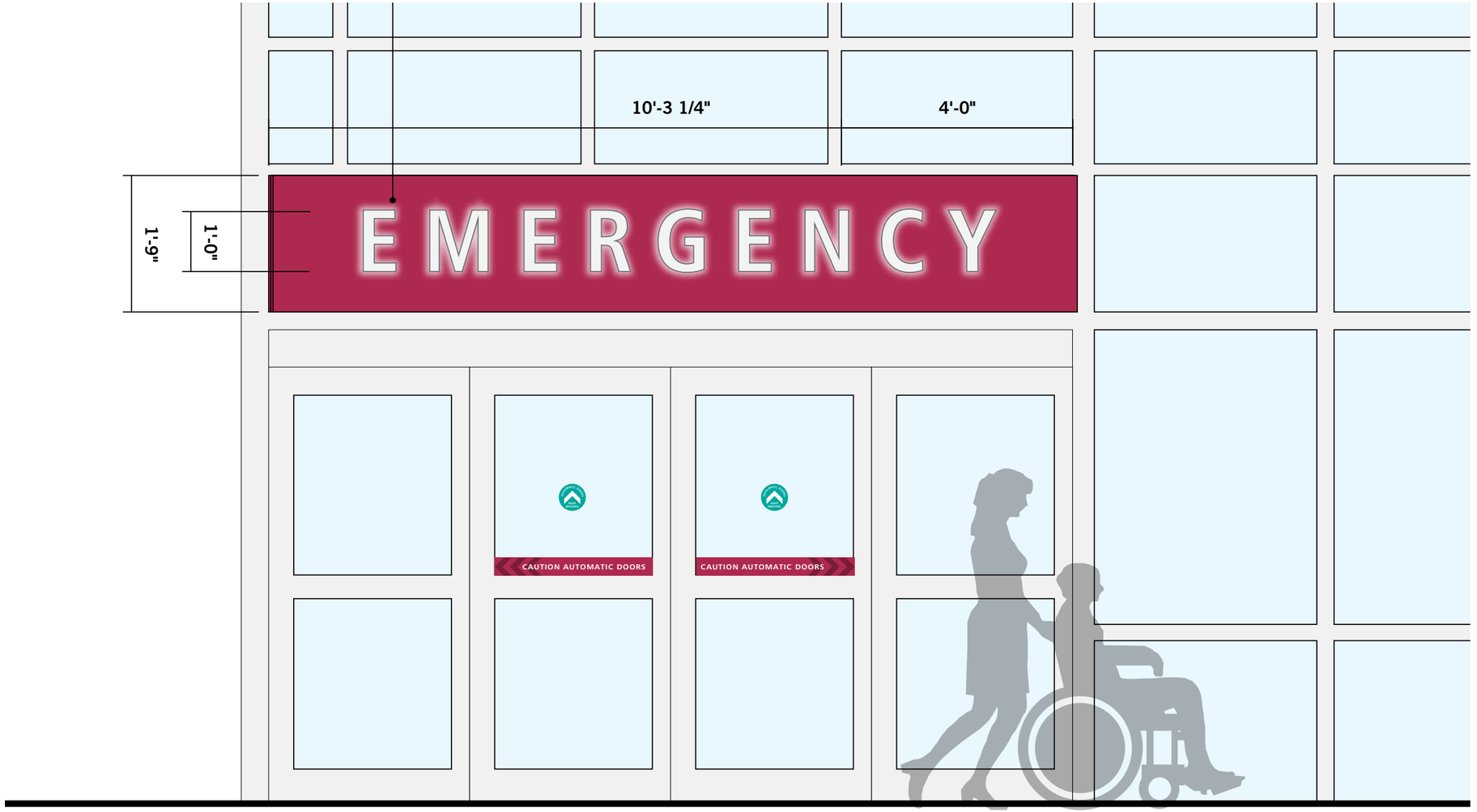


ST.2 Emergency Entry ID



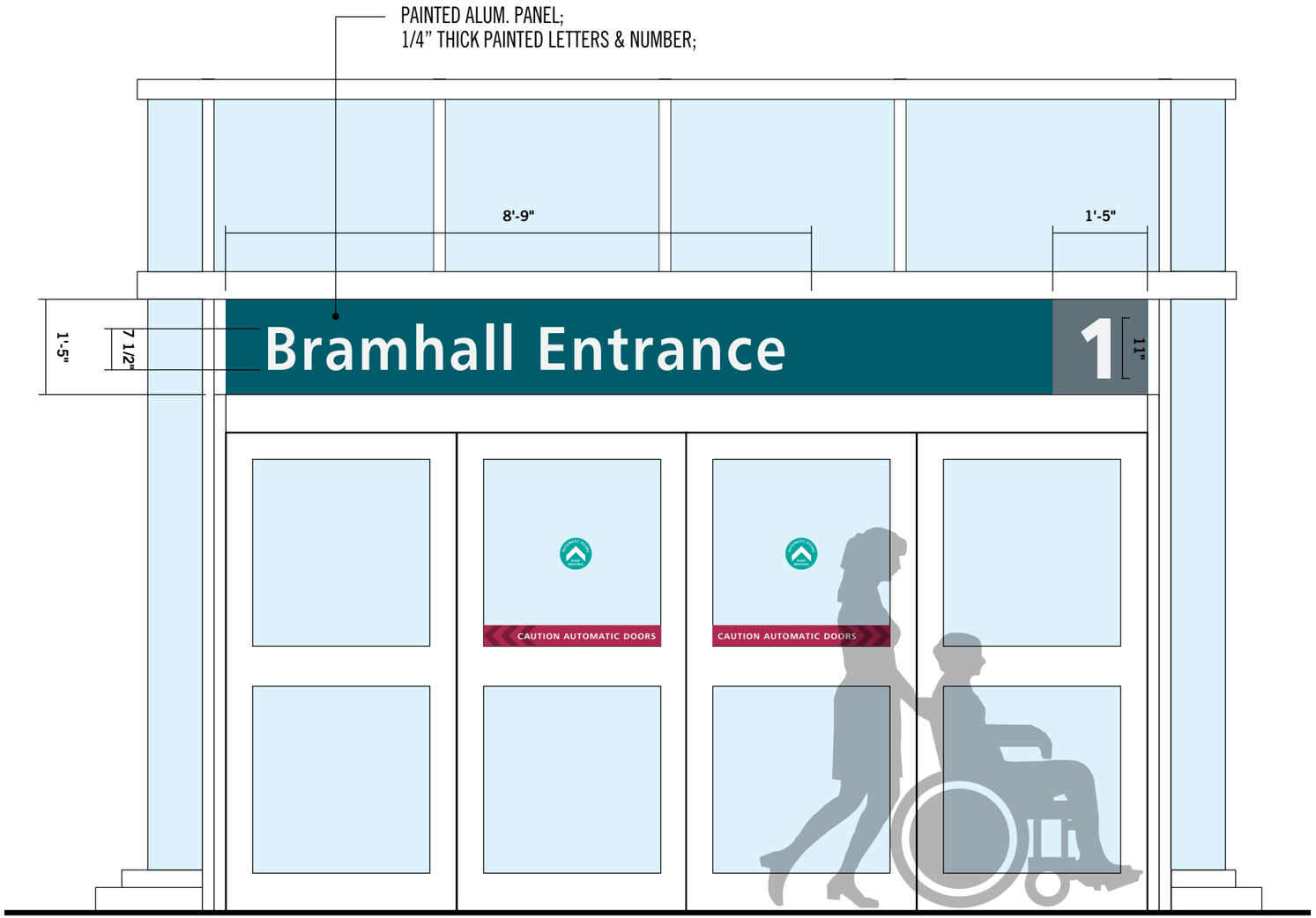
1 Elevation: ST.2b Canopy ID
scale: 1/2" = 1' - 0"

ST.2 Emergency Entry ID



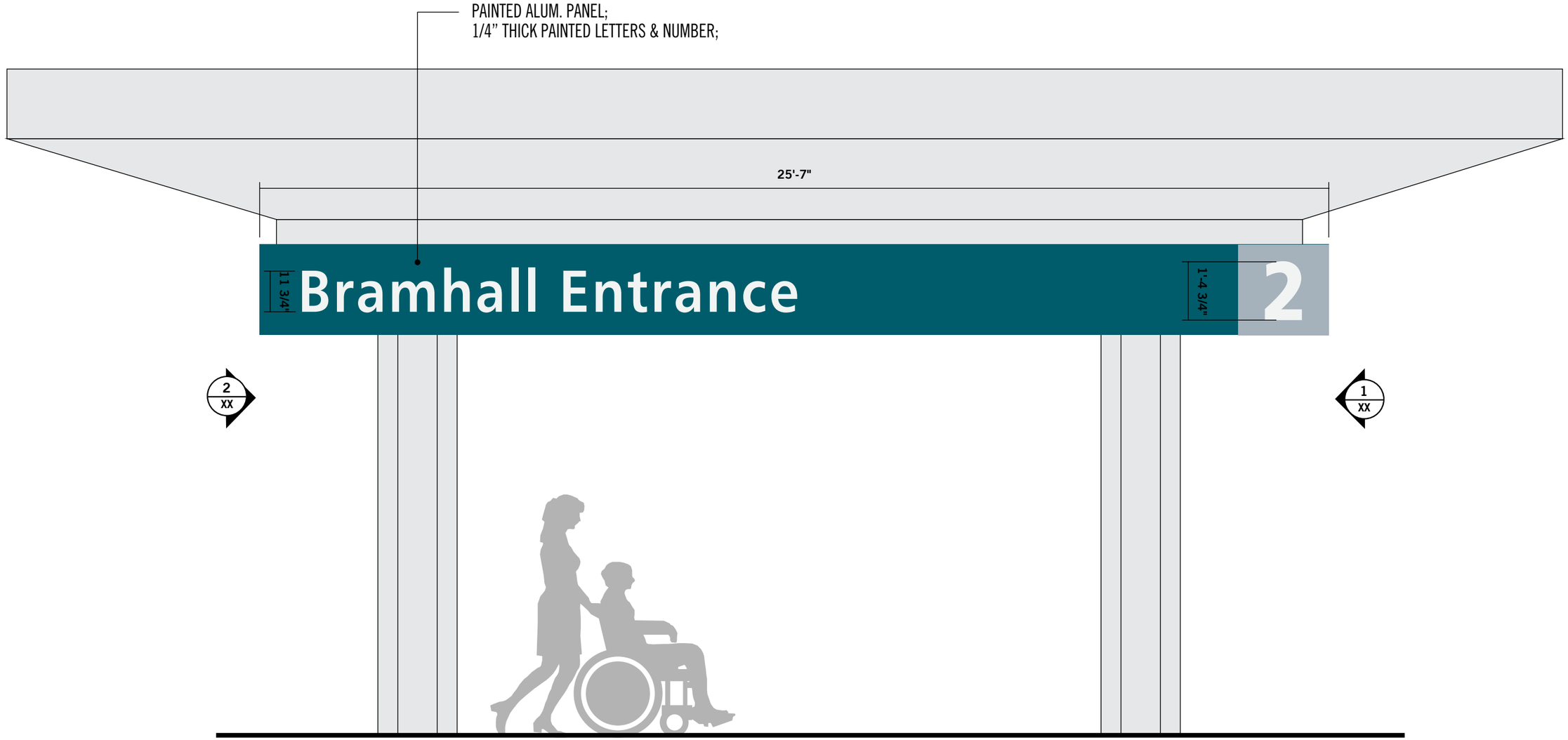
1 Elevation: ST.2a Entry ID
scale: 3/8” = 1’ - 0”

ST.3 Bramhall 1 Entry ID



1 Elevation
scale: 1/2" = 1' - 0"

ST.4 Bramhall 2 Entry ID



1 Elevation: Front
scale: 3/8" = 1' - 0"

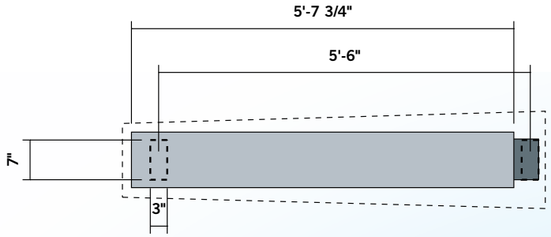
ST.5 Radiation Entry ID



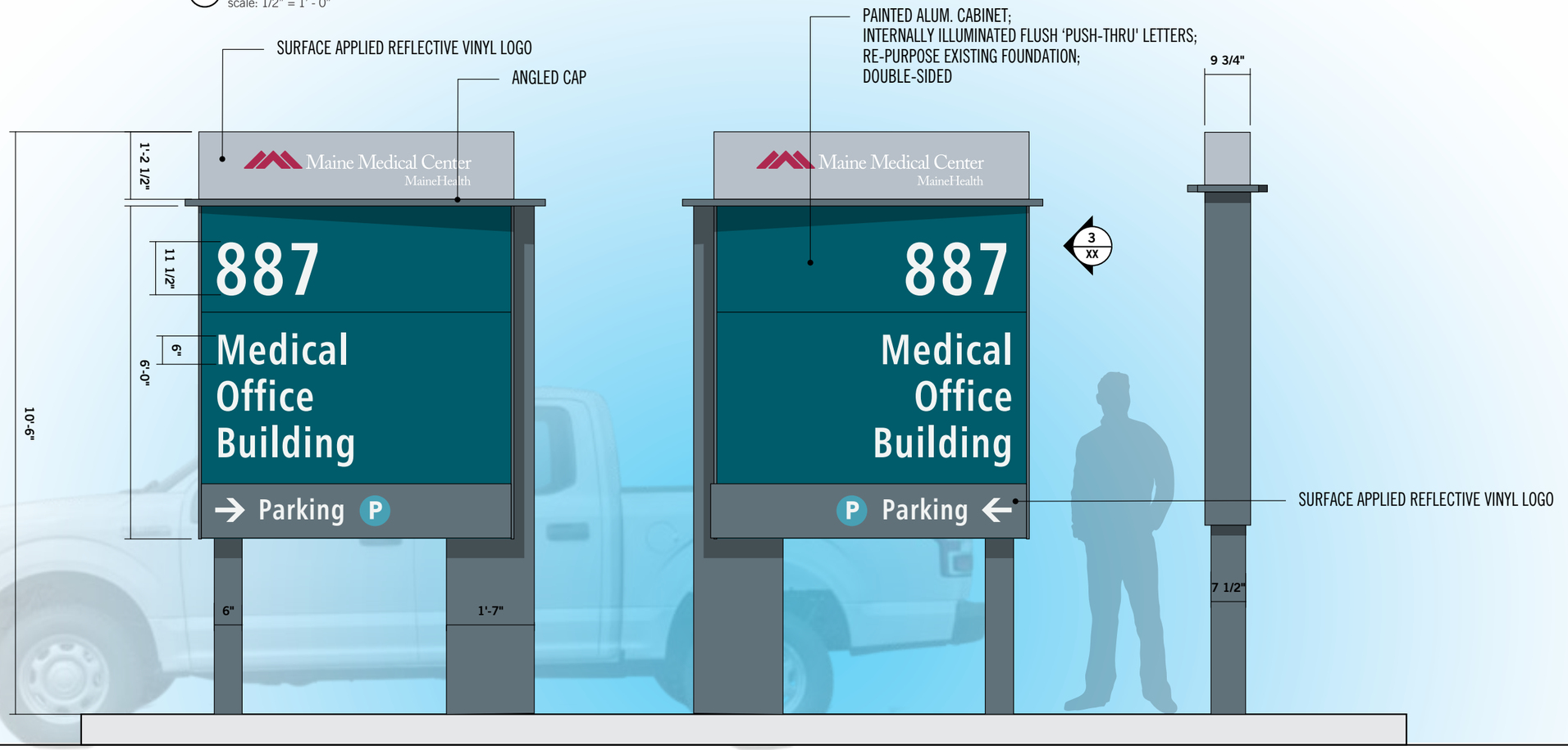
ST.6 Dana Conference Entry ID



ST.7 Vehicular Building ID



4 Plan
scale: 1/2" = 1' - 0"

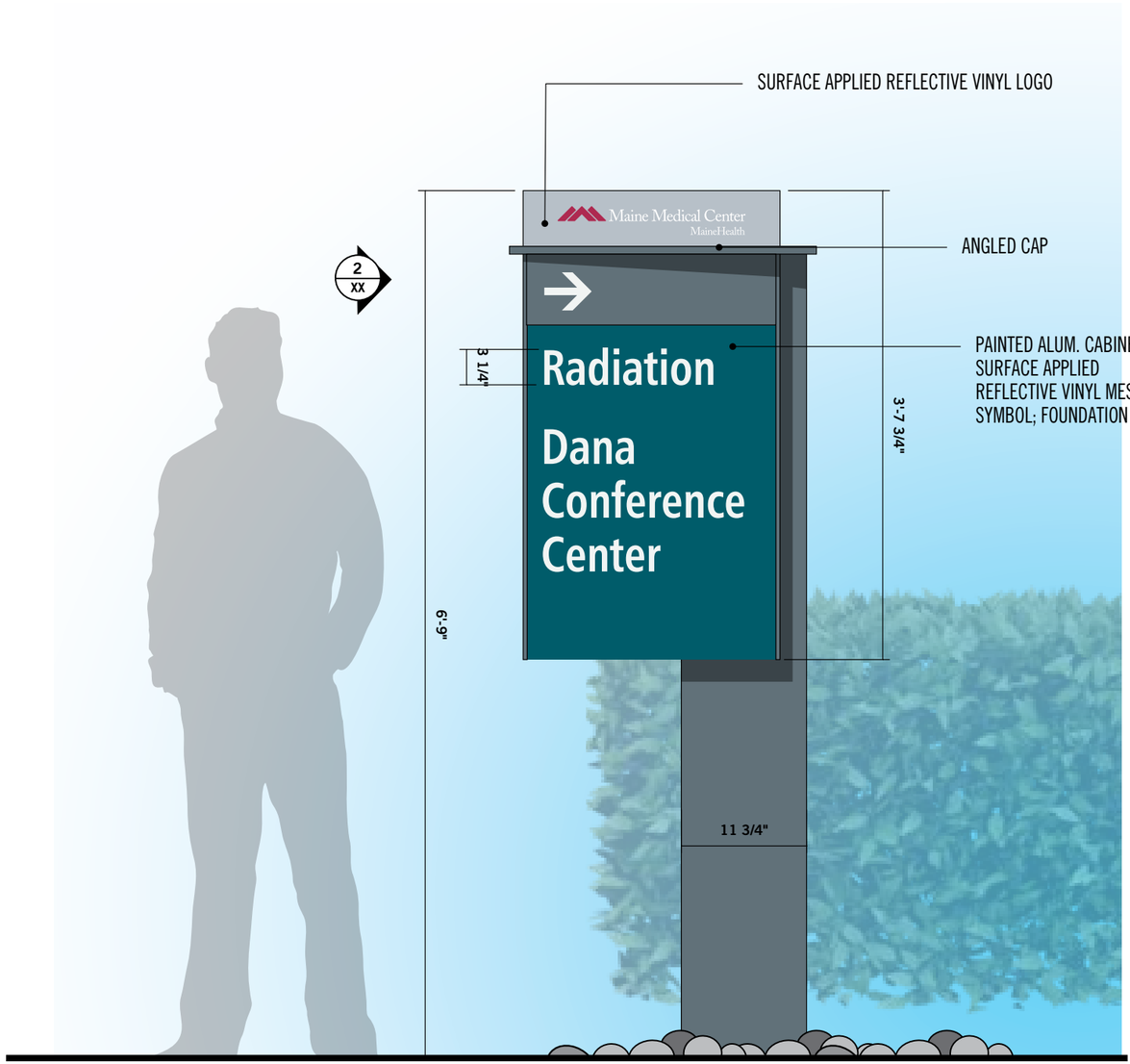


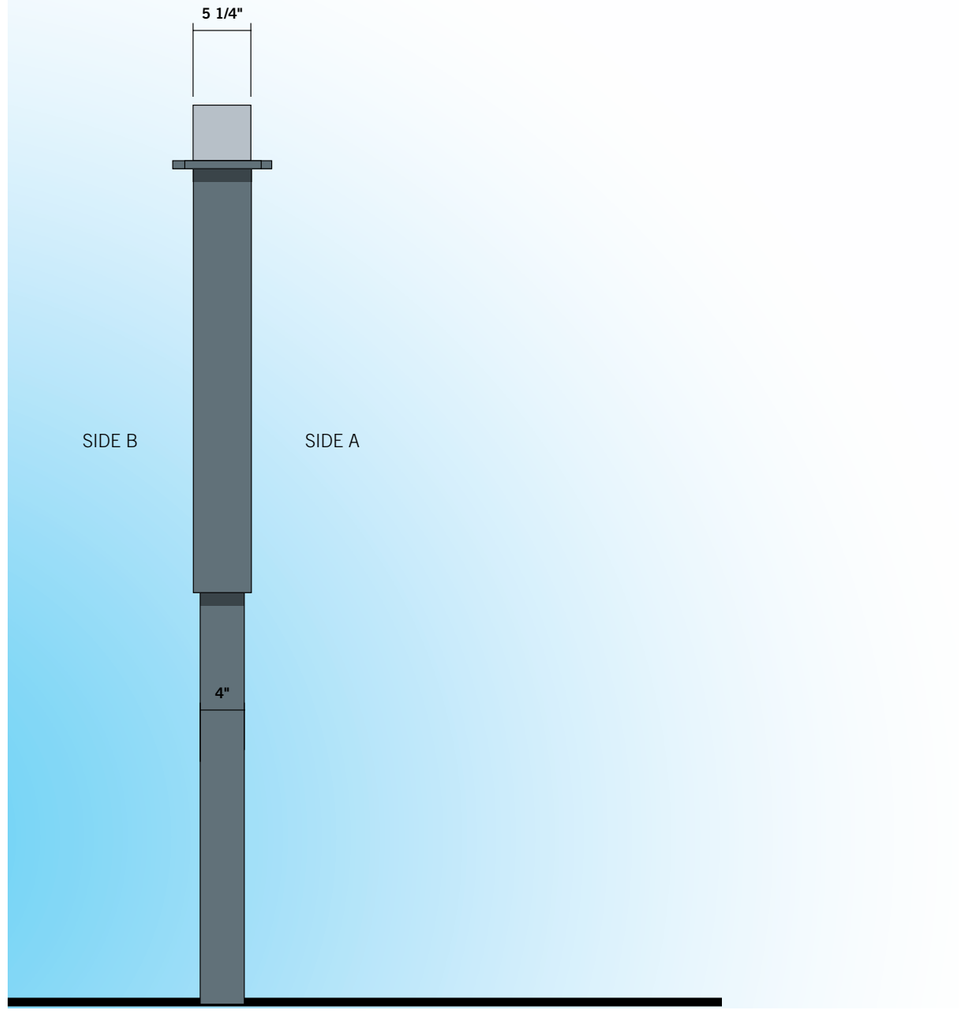
1 Elevation: Side A
scale: 1/2" = 1' - 0"

2 Elevation: Side B
scale: 1/2" = 1' - 0"

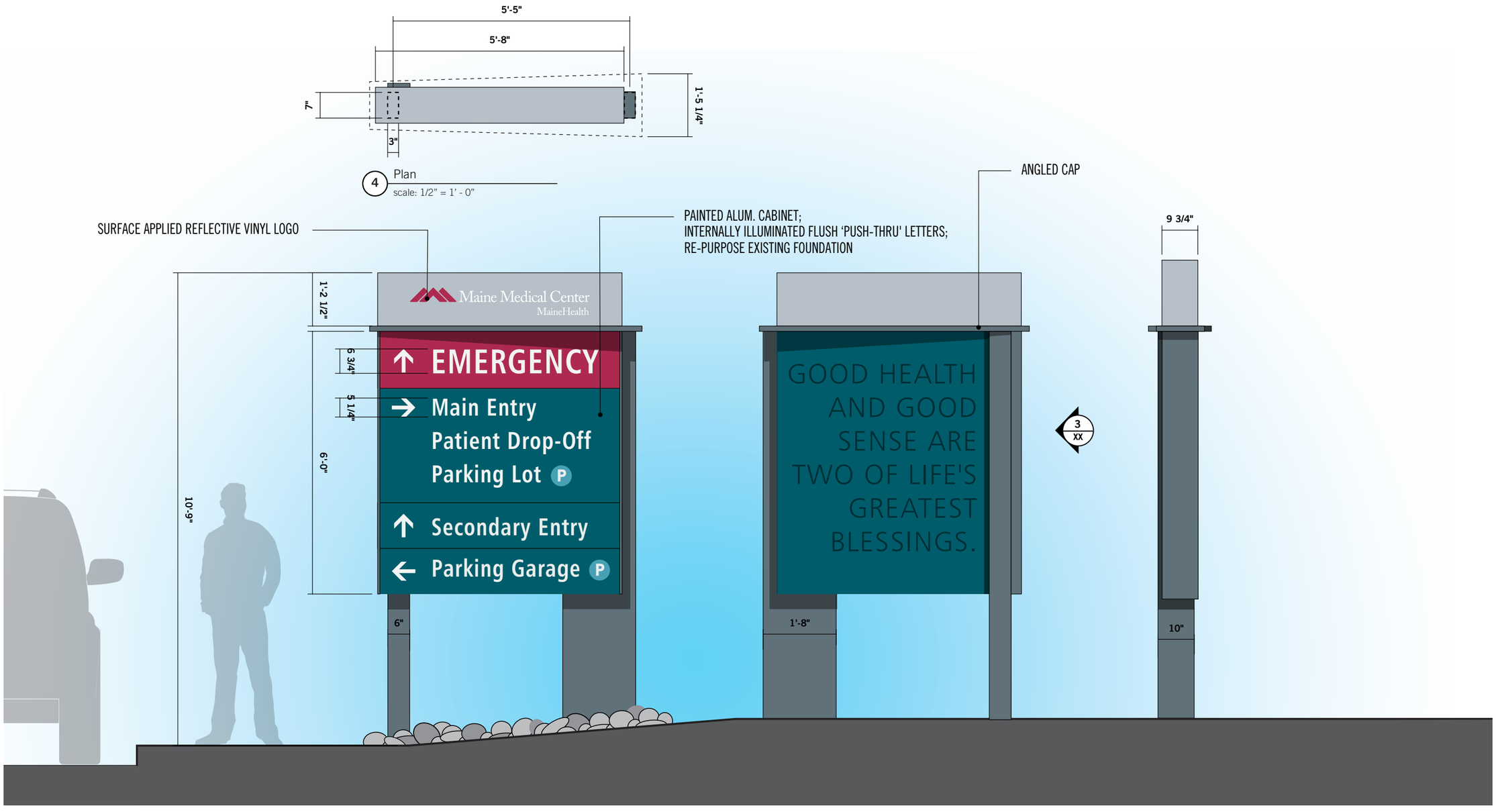
3 Elevation: Side View
scale: 1/4" = 1' - 0"

ST.8 Pedestrian Building ID





ST.9 Primary Vehicular Directional (Typical)



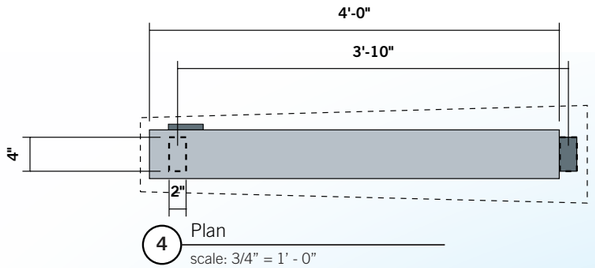
4 Plan
scale: 1/2" = 1' - 0"

1 Elevation: Front
scale: 1/2" = 1' - 0"

2 Elevation: Back
scale: 1/2" = 1' - 0"

3 Elevation: Side
scale: 1/4" = 1' - 0"

ST.10 Secondary Vehicular Directional



4 Plan
scale: 3/4" = 1' - 0"

SURFACE APPLIED REFLECTIVE VINYL LOGO

PAINTED ALUM. CABINET;
INTERNALLY ILLUMINATED FLUSH 'PUSH-THRU' LETTERS;
RE-PURPOSE EXISTING FOUNDATION

ANGLED CAP

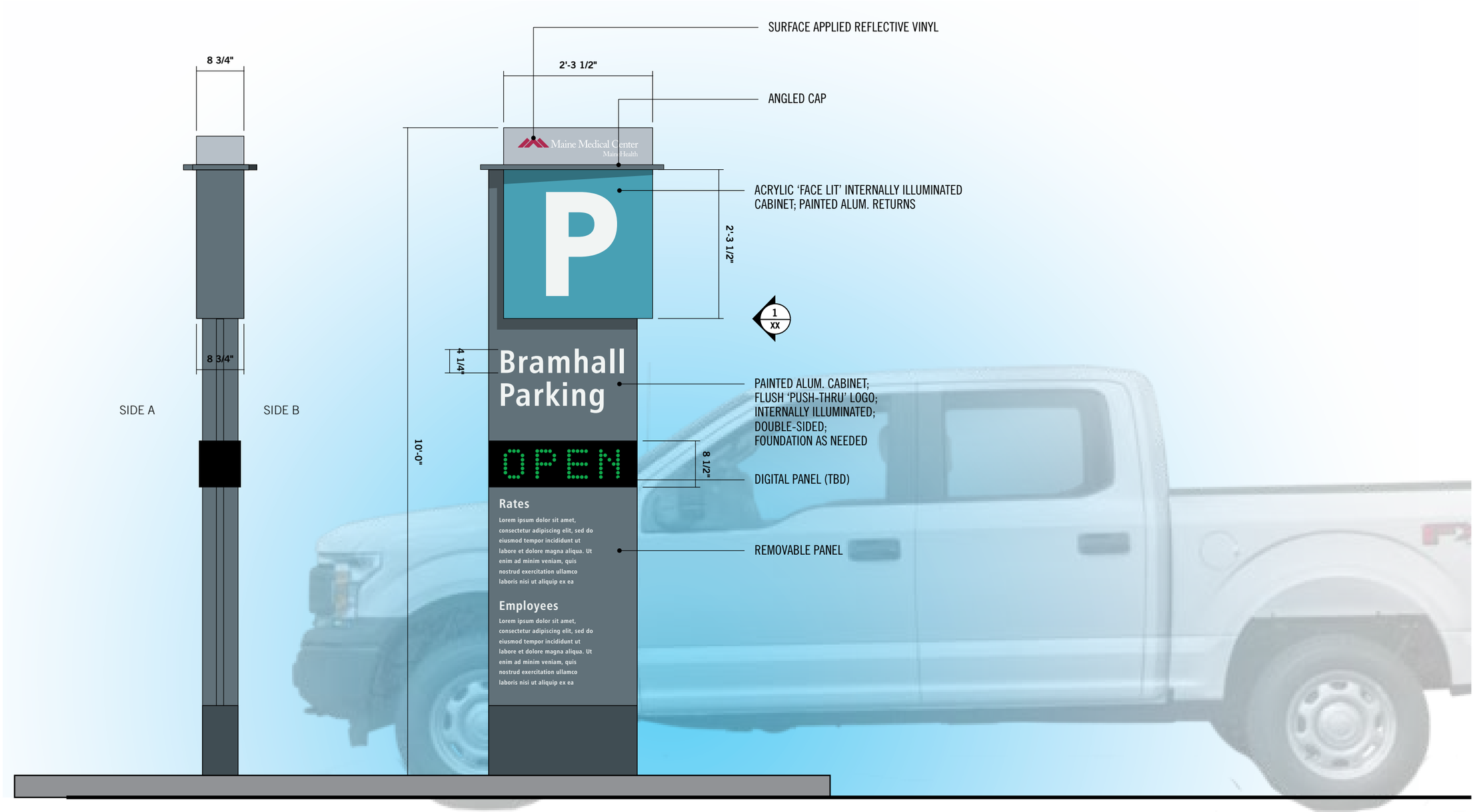


1 Elevation: Front
scale: 3/4" = 1' - 0"

2 Elevation: Back
scale: 3/4" = 1' - 0"

3 Elevation: Side
scale: 3/4" = 1' - 0"

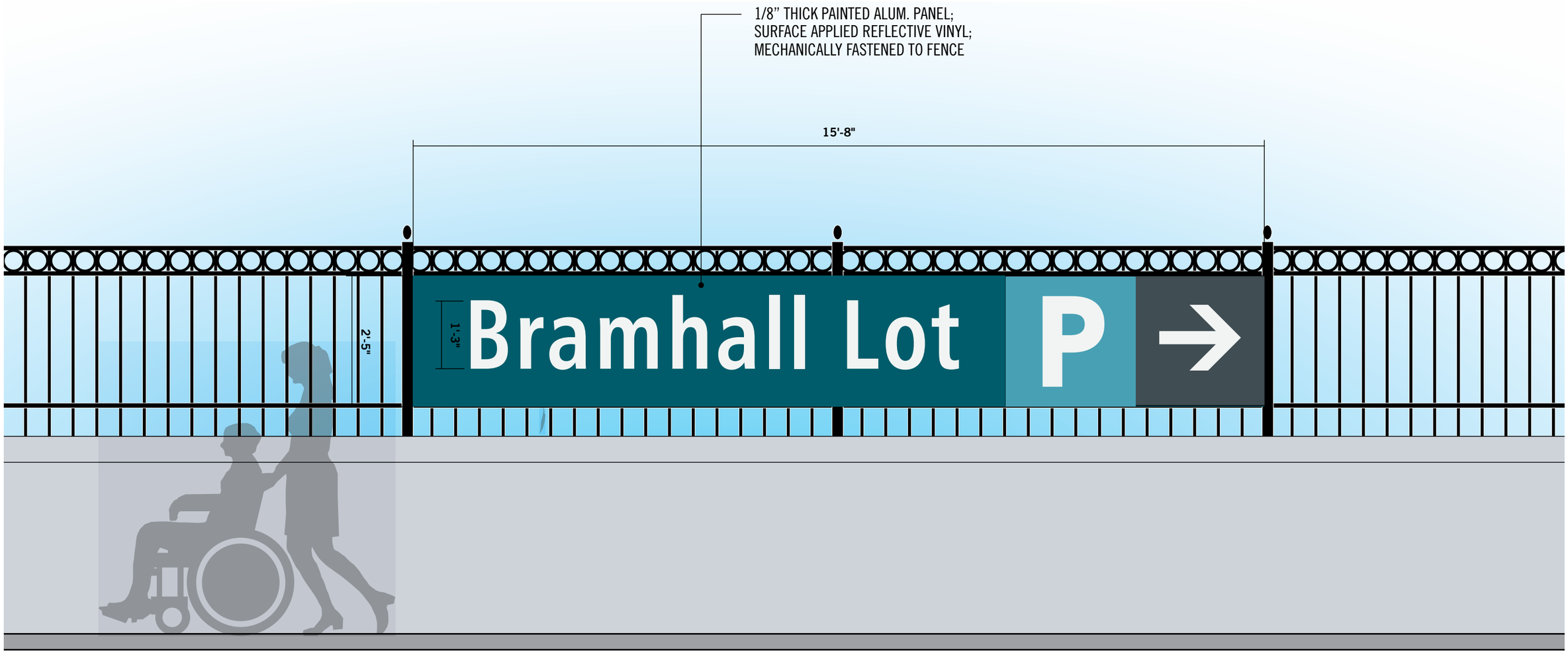
ST.11 Parking ID



1 Elevation: Side View
scale: 3/4" = 1' - 0"

2 Elevation: Side A
scale: 3/4" = 1' - 0"

ST.12 Fence Directional



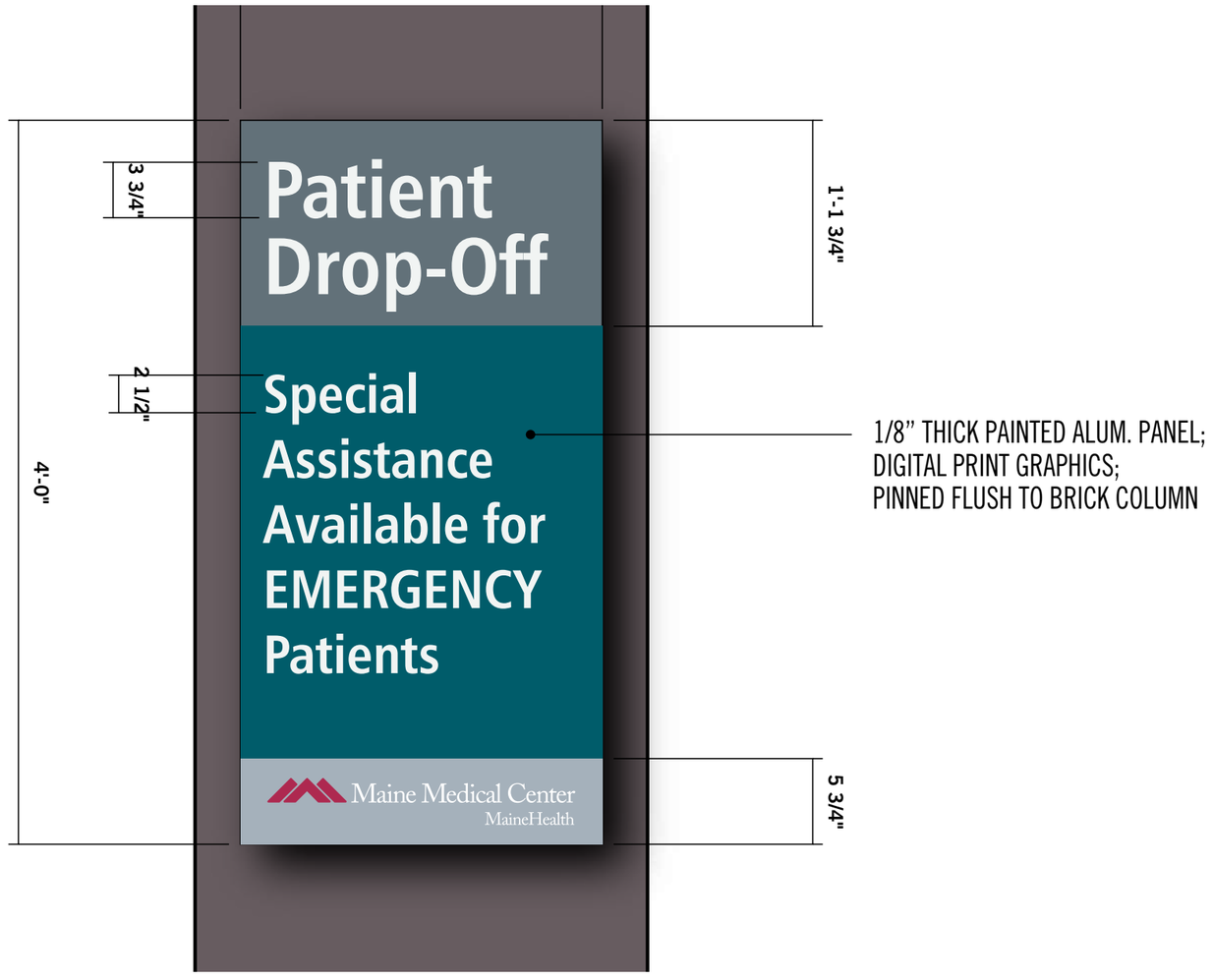
1 Elevation
scale: 1/2” = 1’ - 0”

ST.13 Column Sign



1 Elevation: Context

scale: 1/2" = 1' - 0"



2 Elevation: Detail

scale: 1" = 1' - 0"

DOT Panel

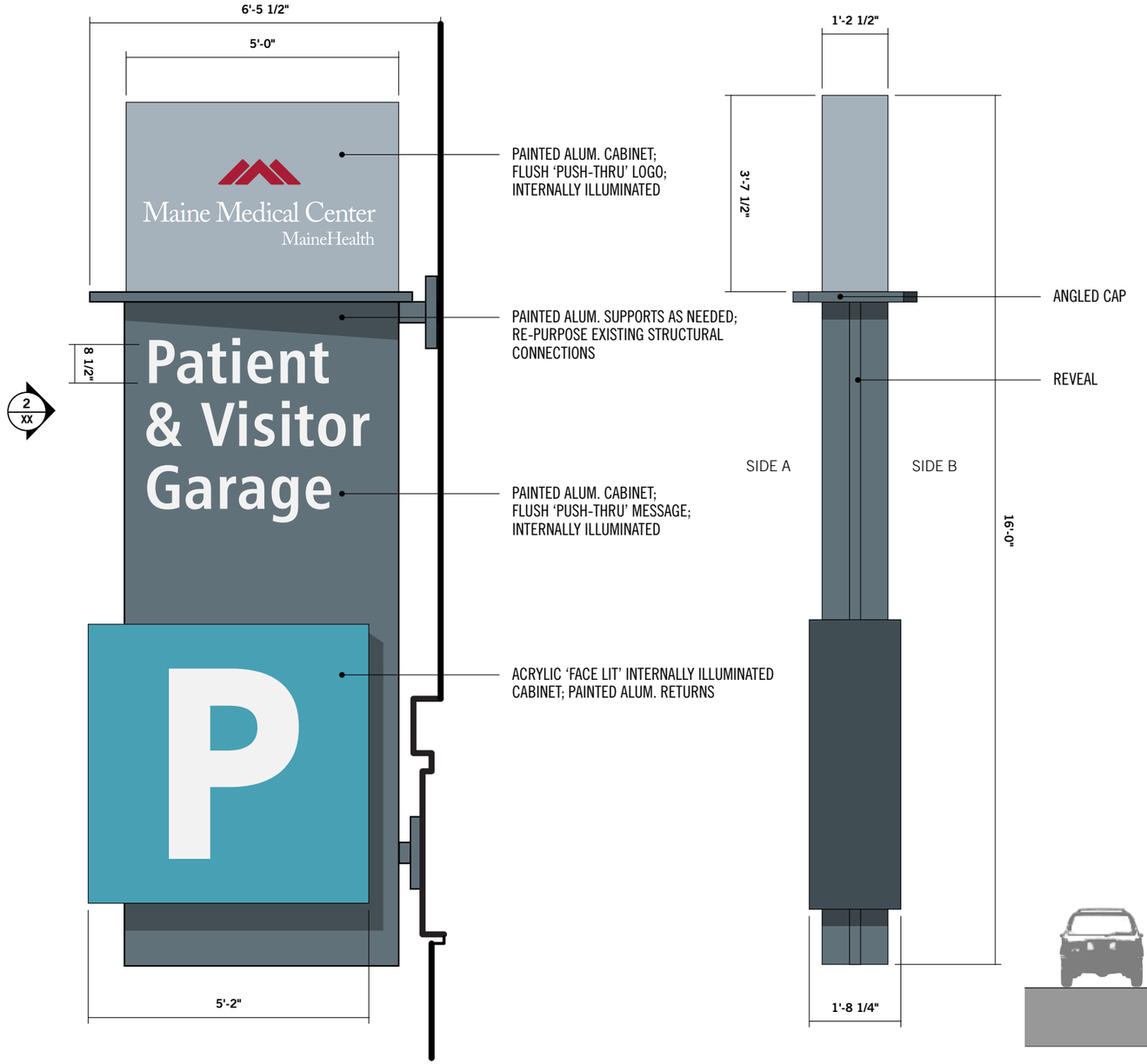



ONLY
EMERGENCY


ONLY

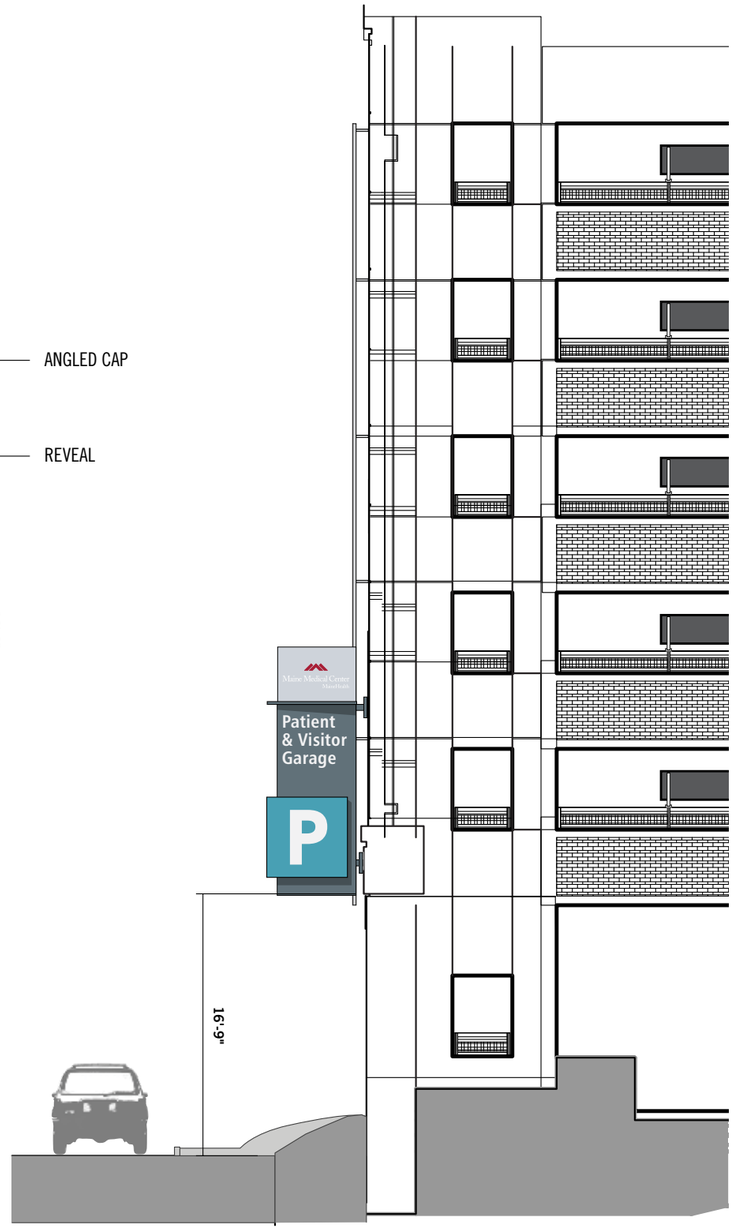

H
MERCY
MAINE MED

VG.1 Parking Blade



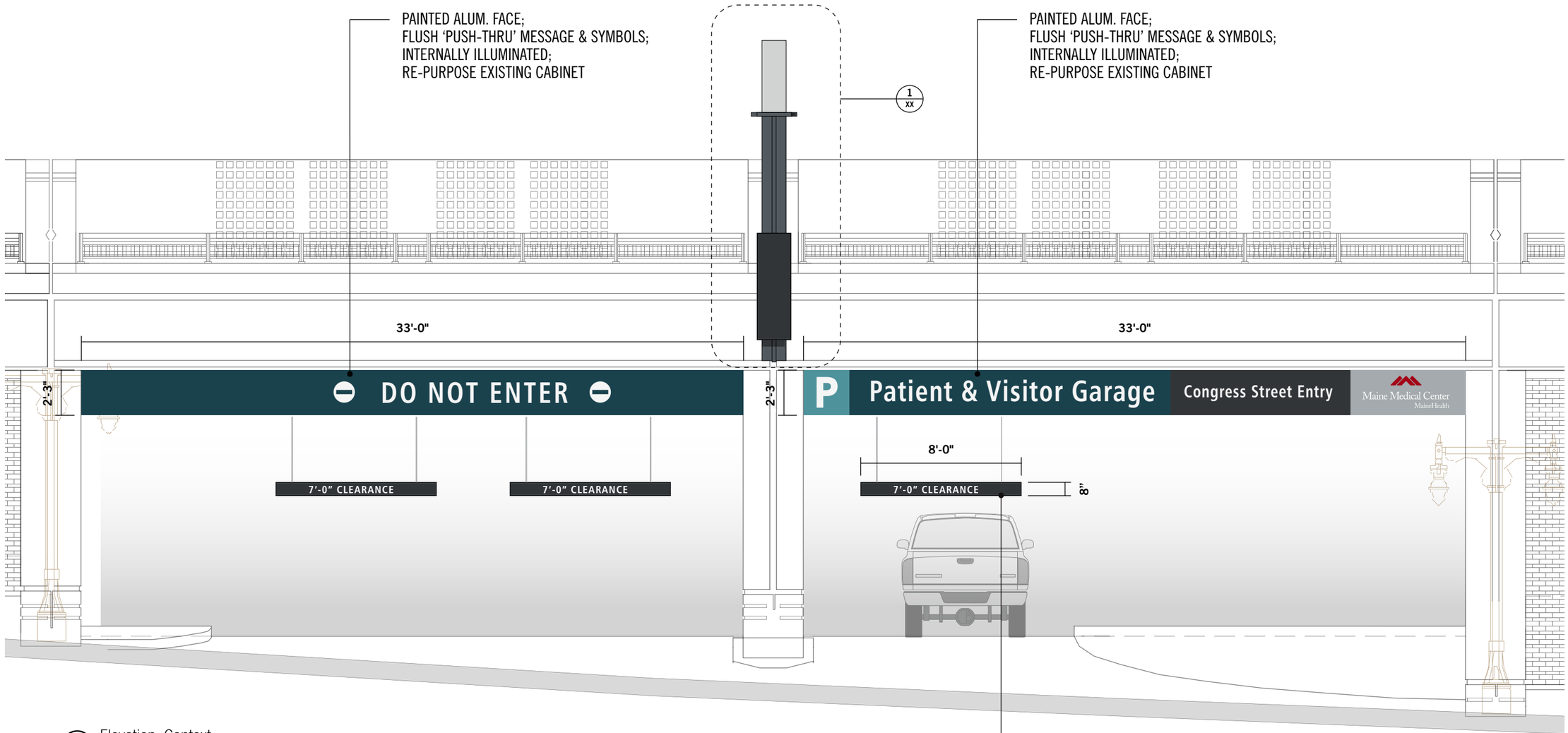
1 Elevation: Side A
scale: 1/2" = 1' - 0"

2 Elevation: Side View
scale: 1/2" = 1' - 0"



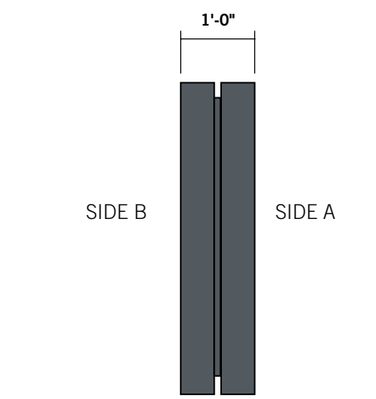
3 Elevation: Context
scale: 1/8" = 1' - 0"

VG.2 Congress Entry ID

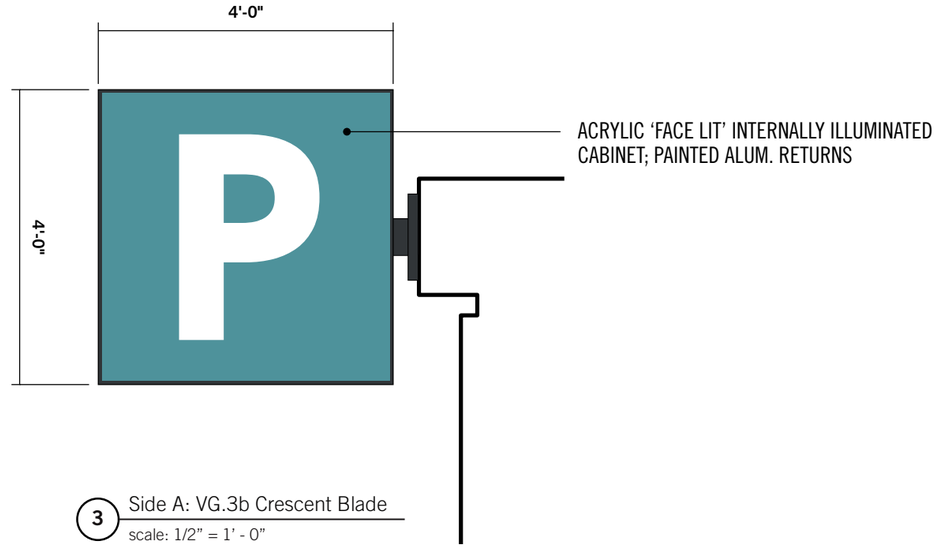


1 Elevation: Context
scale: 3/16" = 1' - 0"

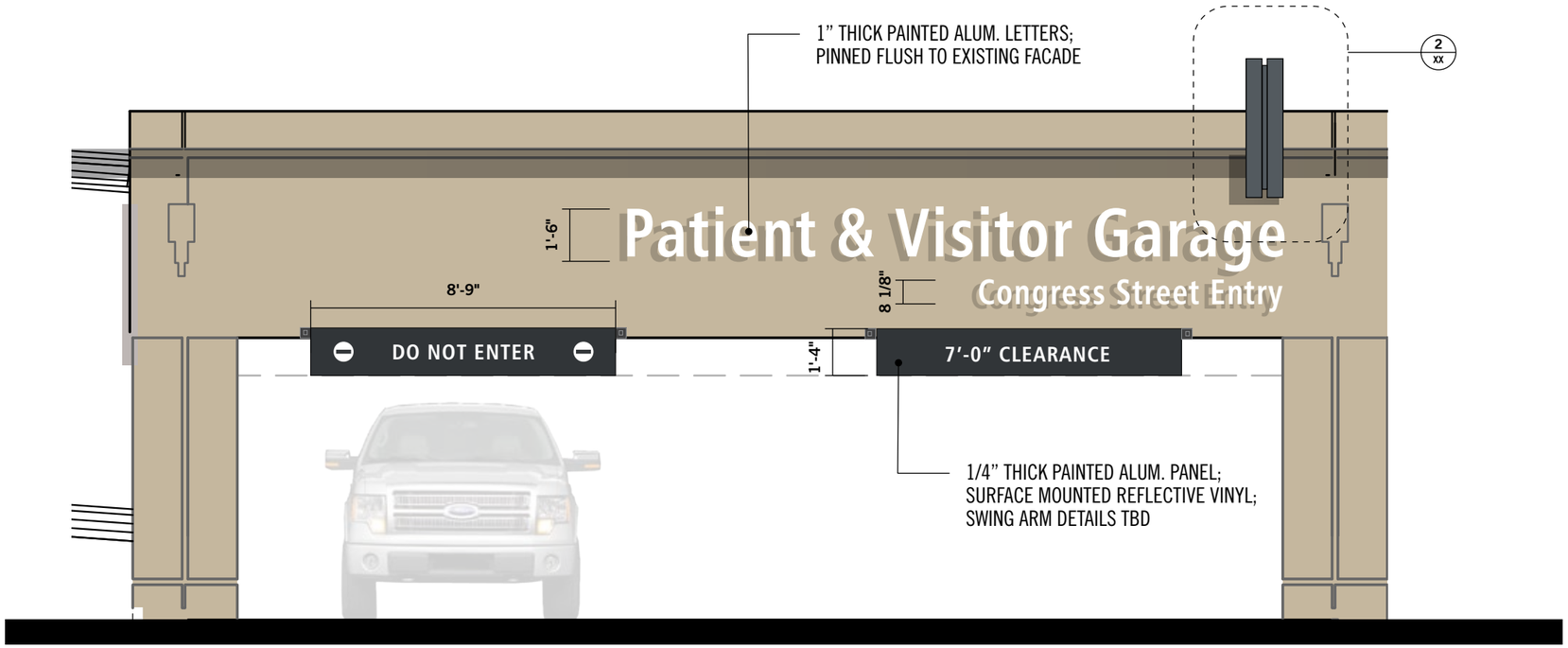
VG.3 Crescent Entry ID



2 Side View: VG.3b Crescent Blade
scale: 1/2" = 1' - 0"



3 Side A: VG.3b Crescent Blade
scale: 1/2" = 1' - 0"

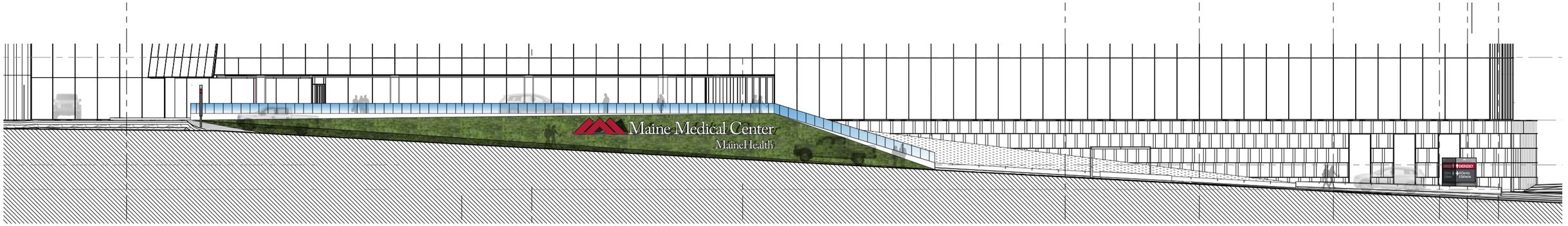


1 Elevation: VG.3a Entry ID Crescent
scale: 1/4" = 1' - 0"

02

Congress Street Building Signage

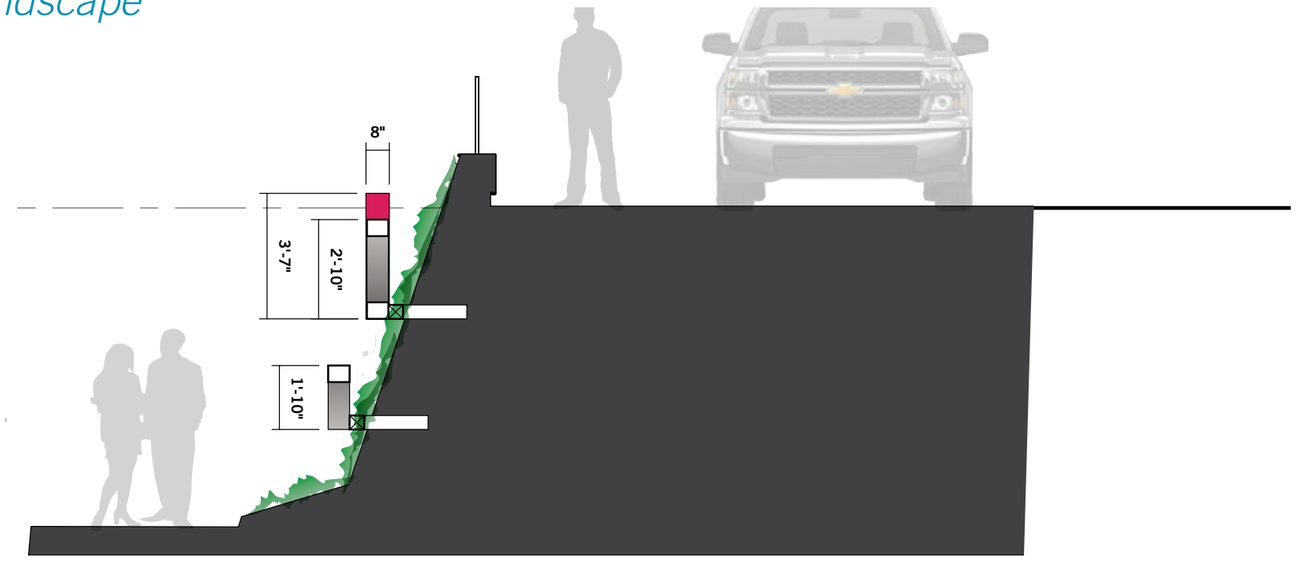
Preliminary
Sign Location
Plan

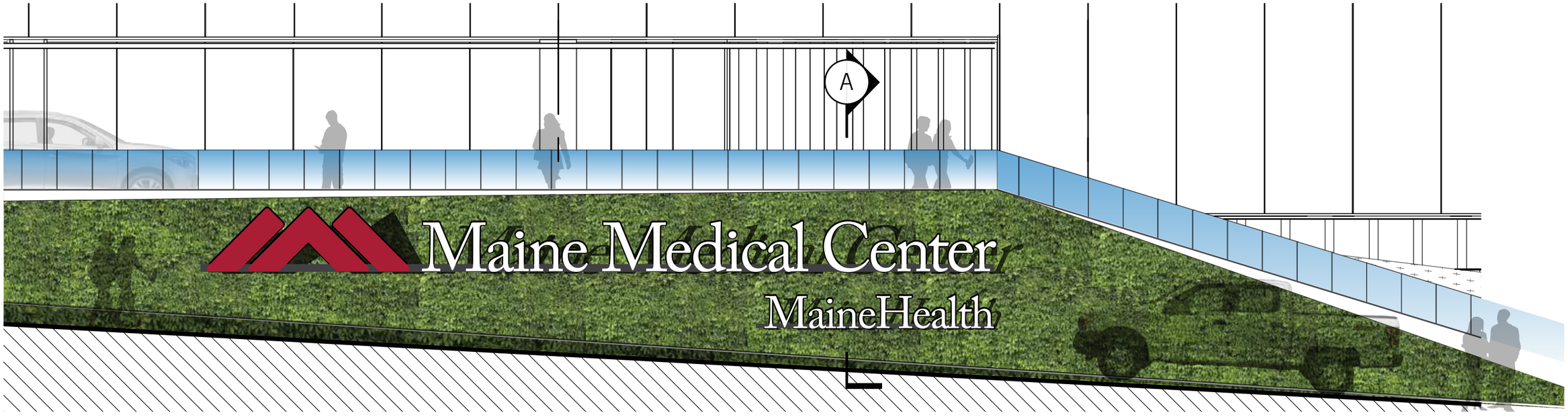




CS.1 Project Monument

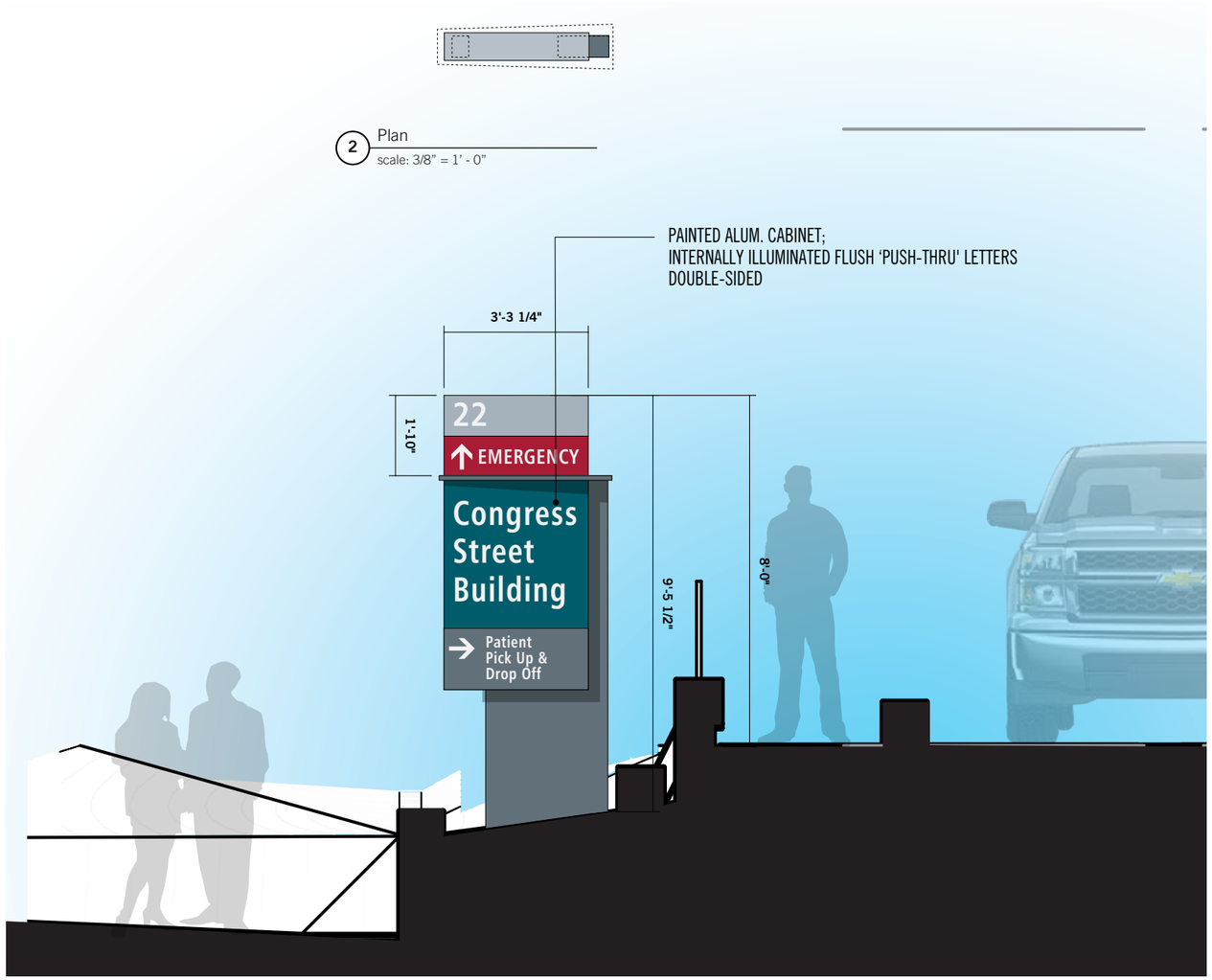
NOTE: Exact placement of signage to be determined once landscape design is finalized with the City of Portland.





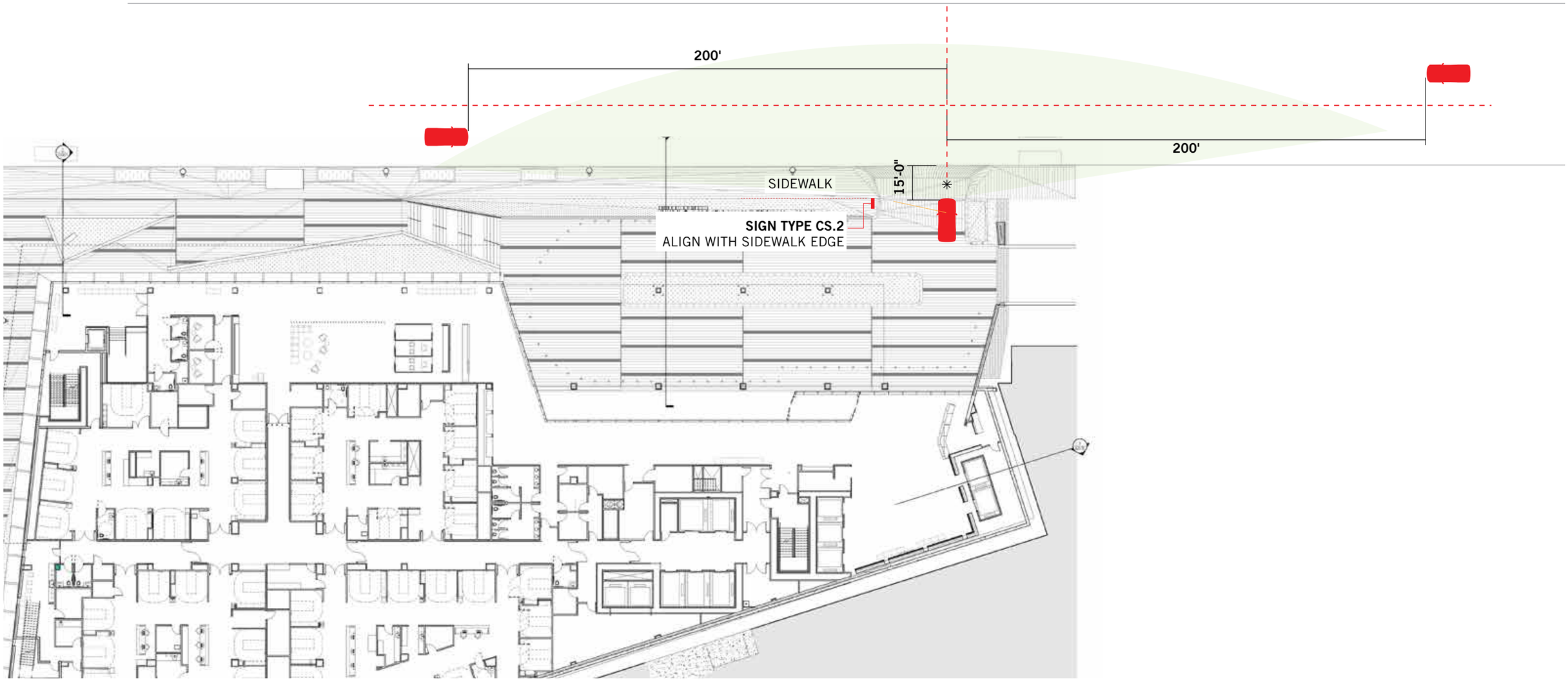
CS.2 Building Identification

NOTE: Exact placement of signage to be determined once landscape design is finalized with the City of Portland.

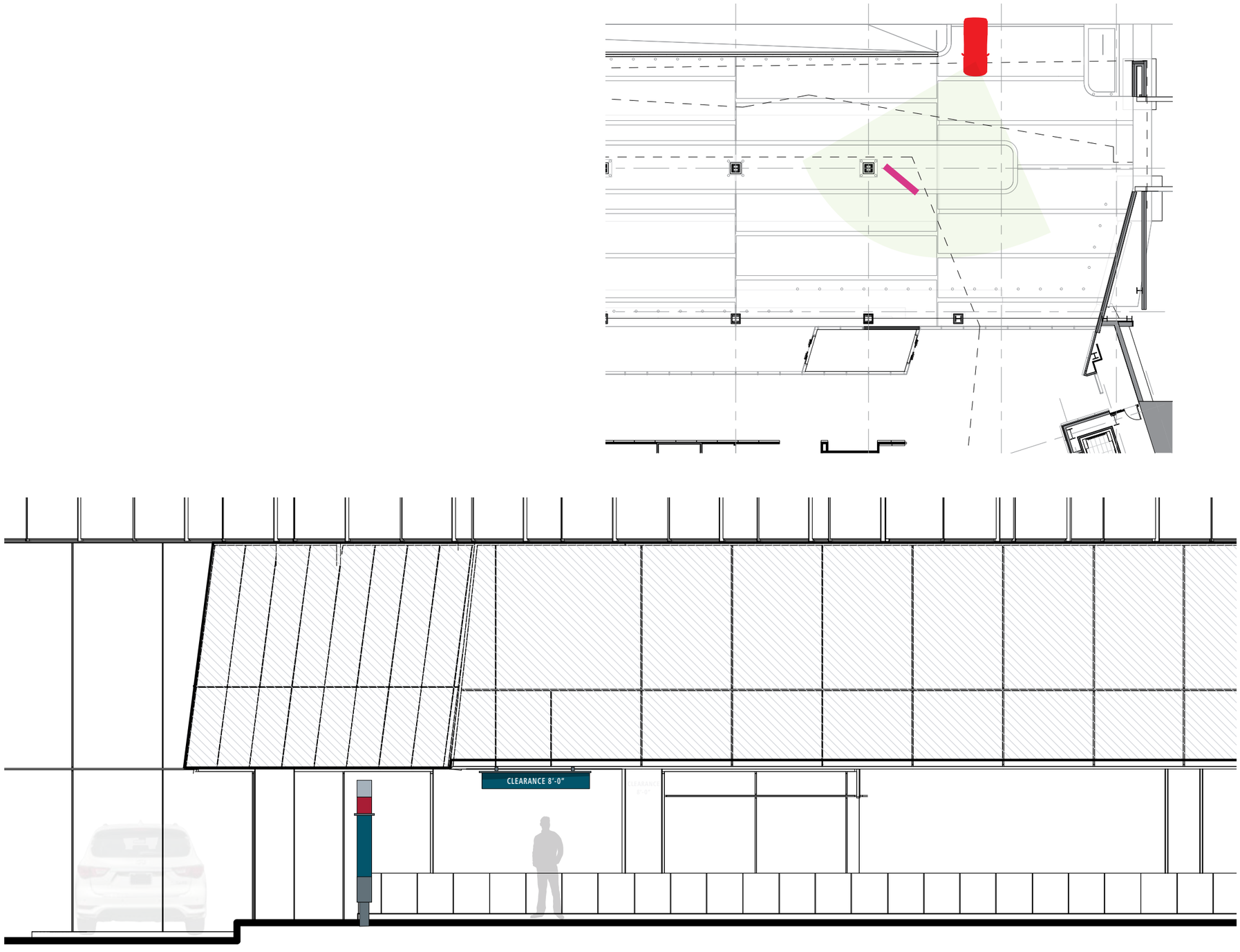


CS.2 Site Line Analysis

NOTE: Exact placement of signage to be determined once landscape design is finalized with the City of Portland.

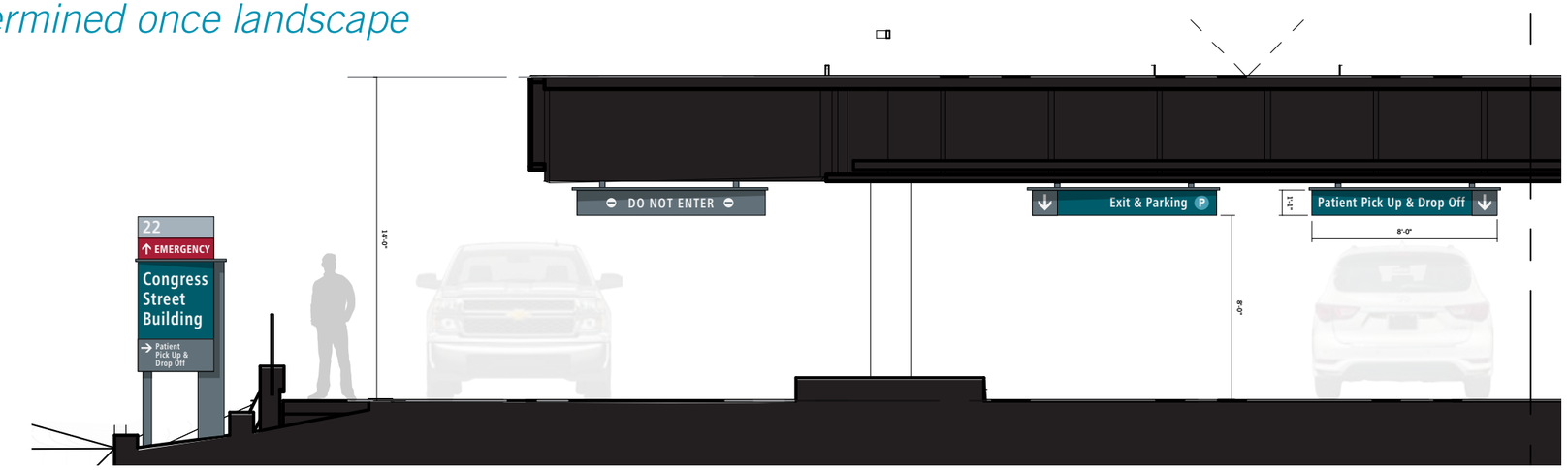


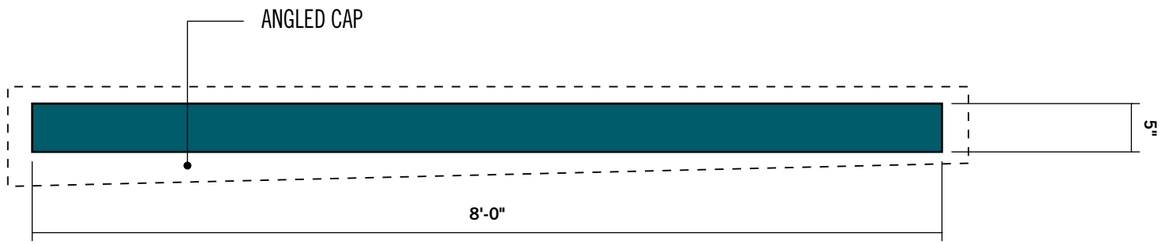
Clearance Sign



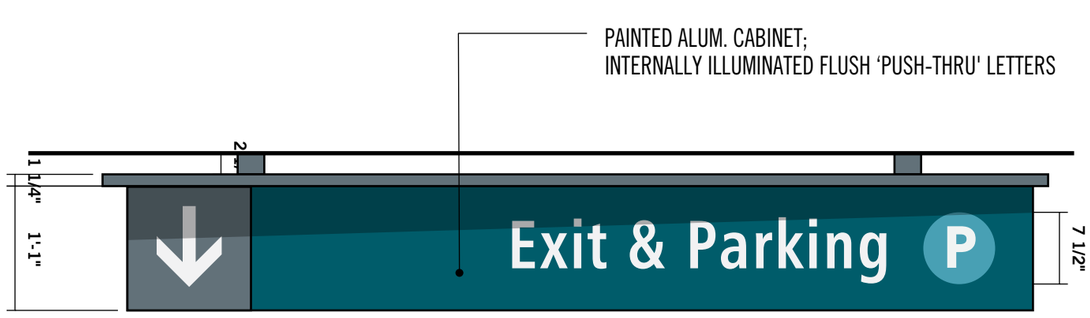
Parking Directionals

NOTE: Exact placement of signage to be determined once landscape design is finalized with the City of Portland.

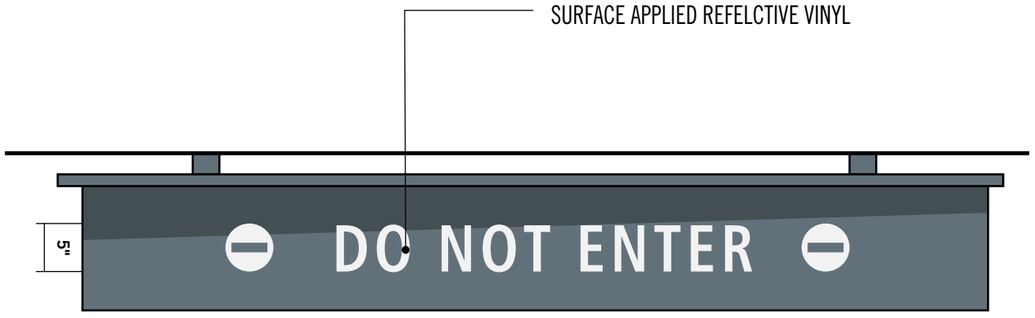




3 Plan
scale: 3/4" = 1' - 0"



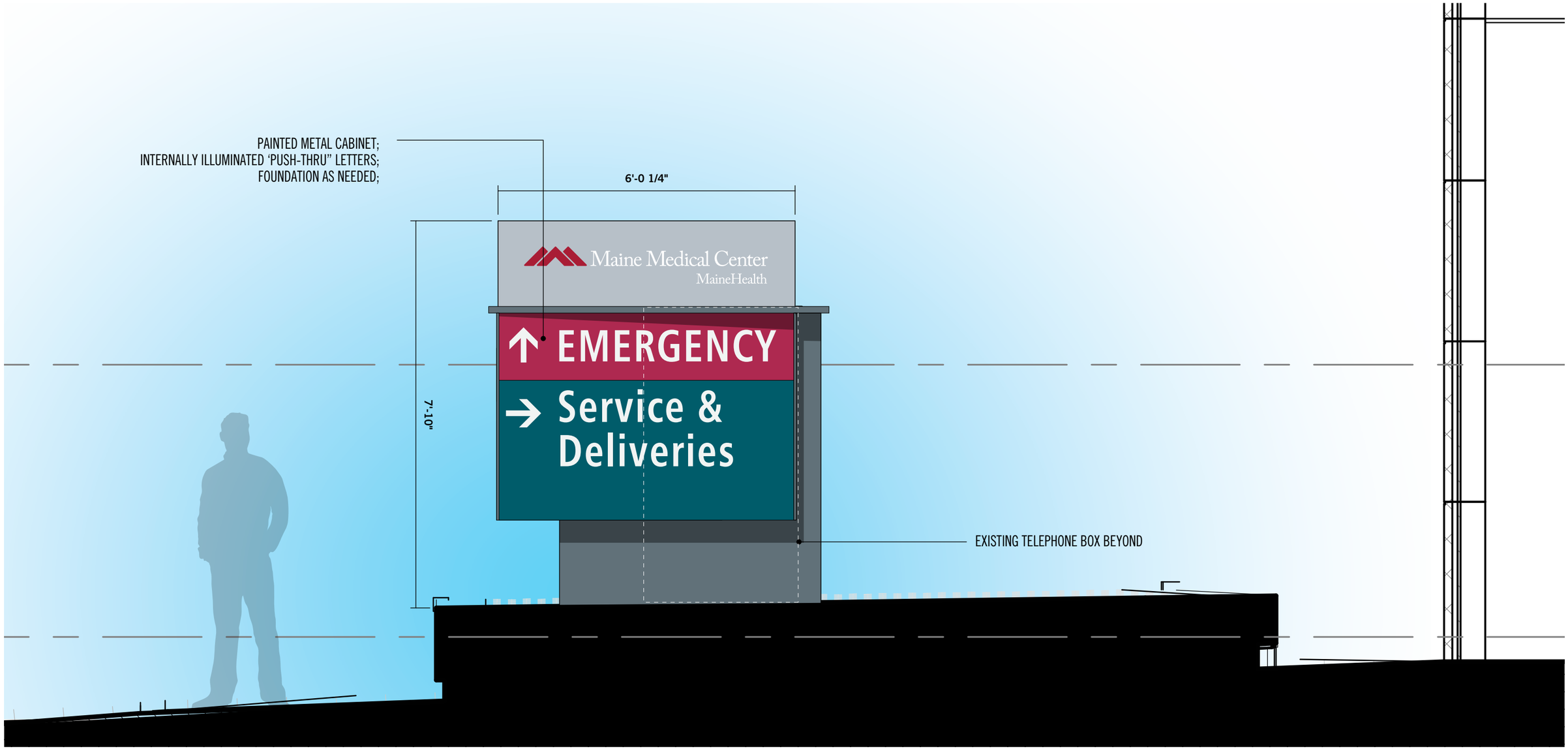
1 Elevation: Front
scale: 3/4" = 1' - 0"



1 Elevation: Back
scale: 3/4" = 1' - 0"

CS.3 Corner Sign

NOTE: Exact placement of signage to be determined once landscape design is finalized with the City of Portland.



CS.3 Corner Sign

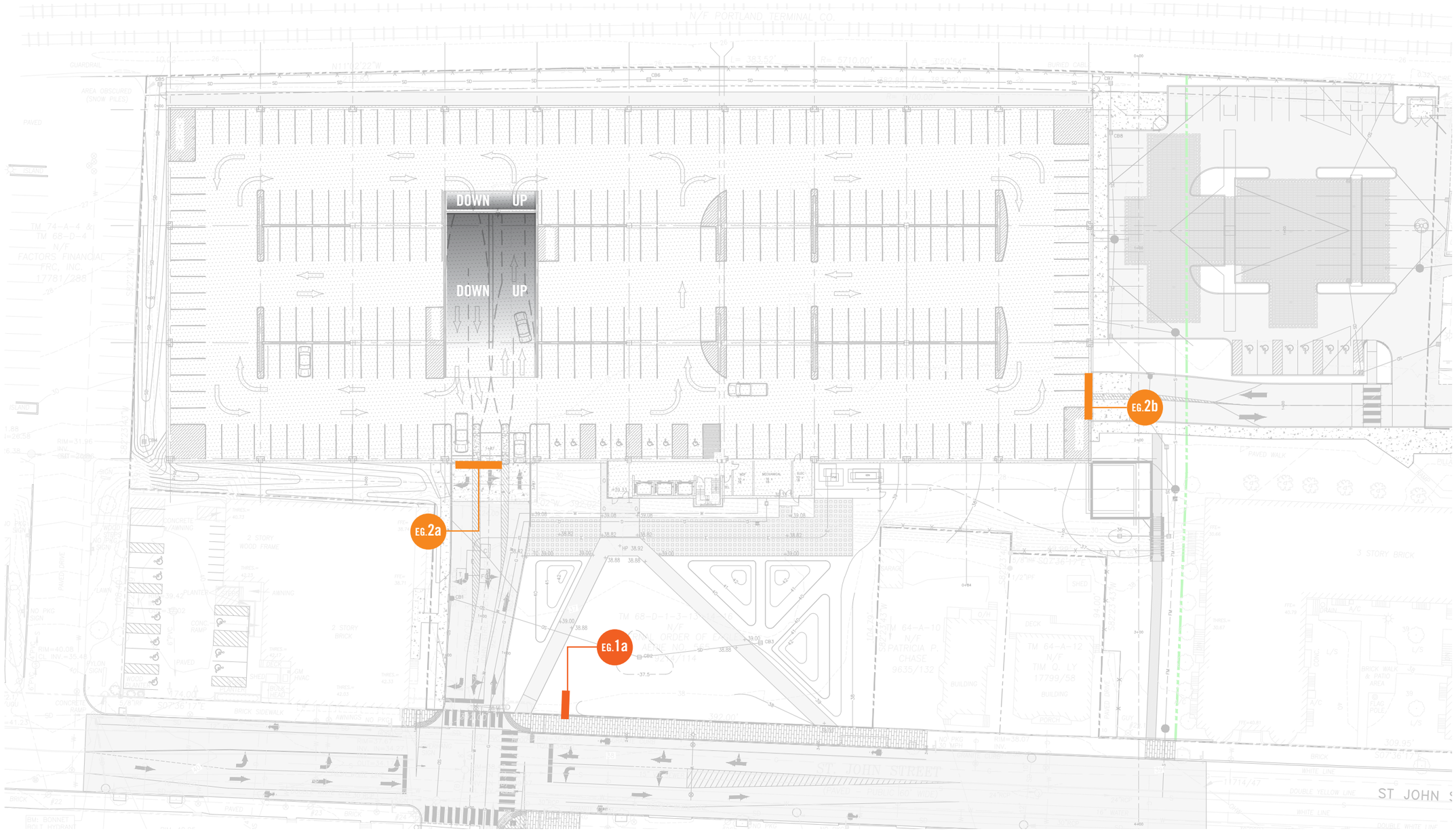
NOTE: Exact placement of signage to be determined once landscape design is finalized with the City of Portland.



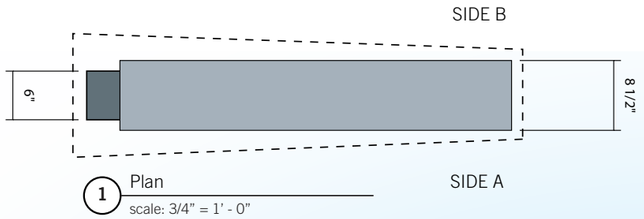
03

Employee Garage Signage

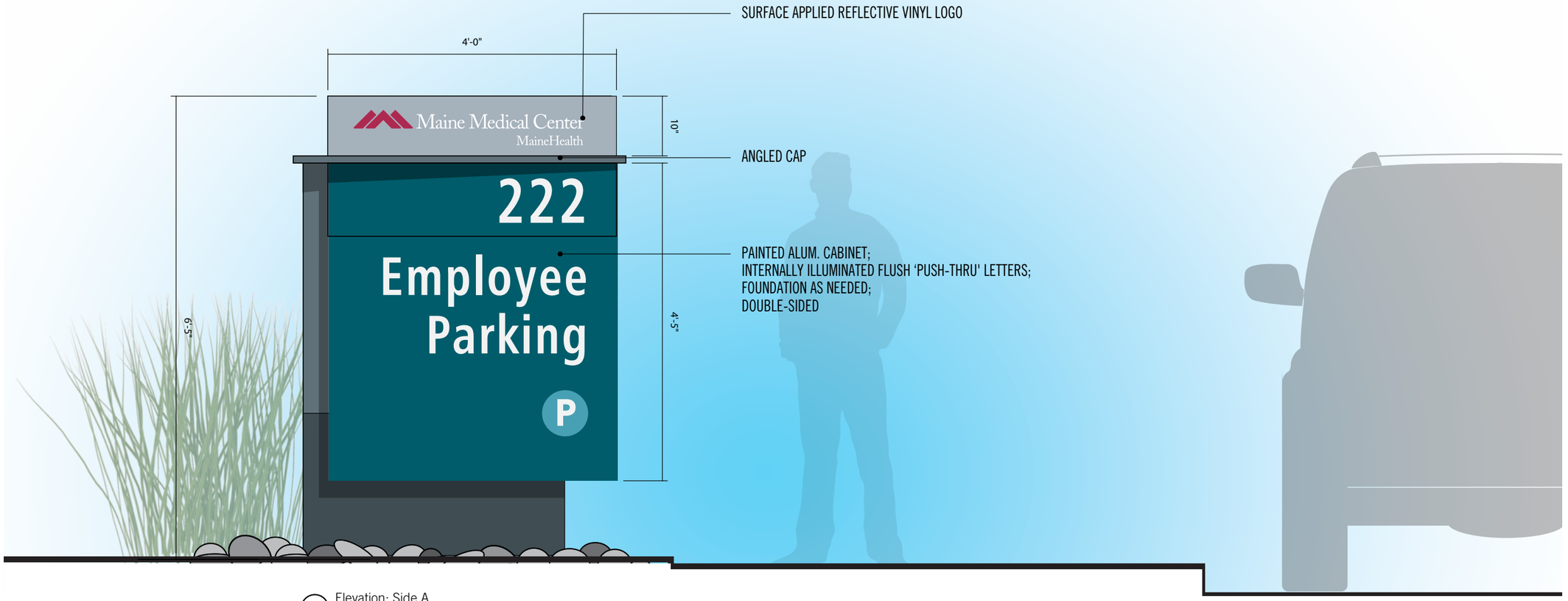
Preliminary Sign Location Plan (Level 1)



EG.1 Monument Sign

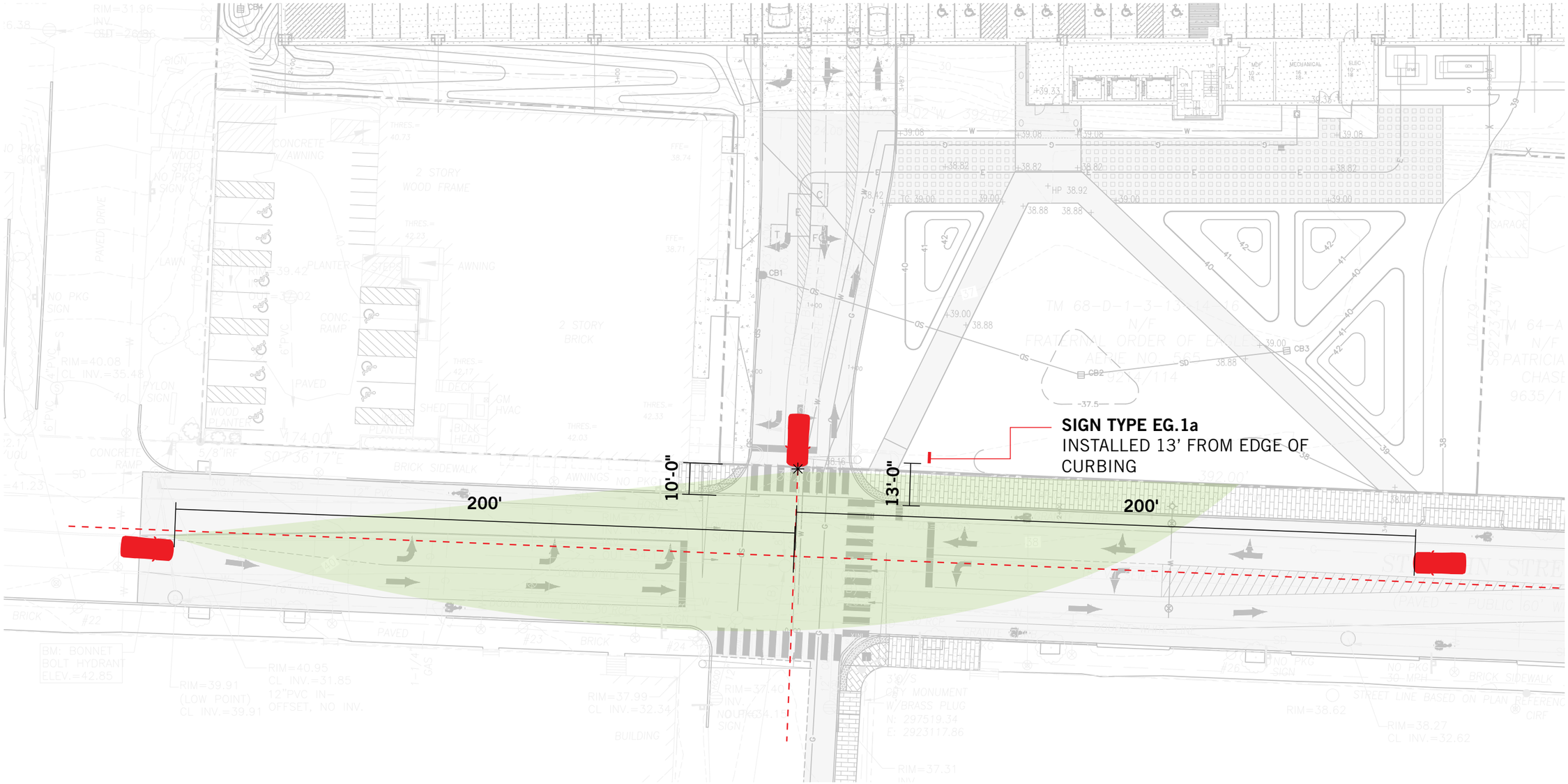


1 Plan
scale: 3/4" = 1' - 0"

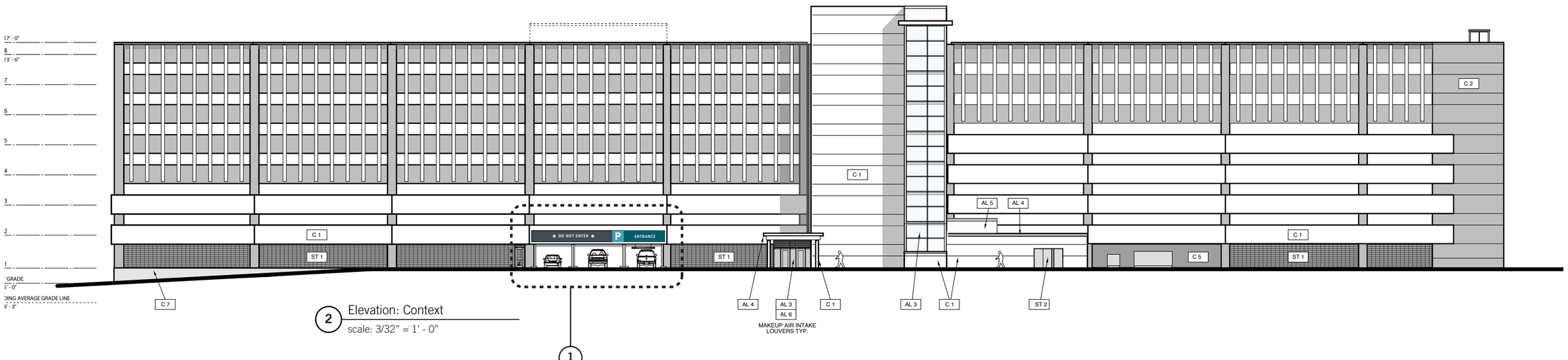


1 Elevation: Side A
scale: 3/4" = 1' - 0"

EG.1a Site Line Analysis

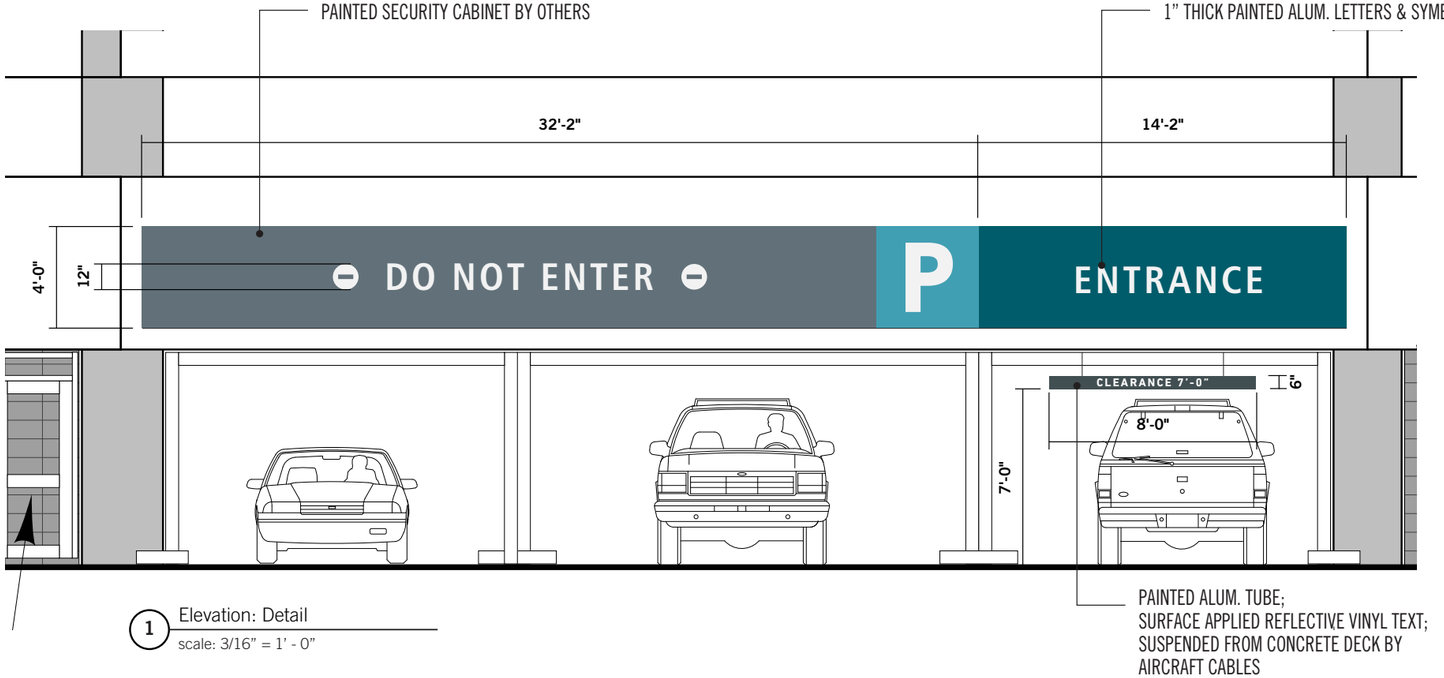


EG.2 East Garage ID



2 Elevation: Context

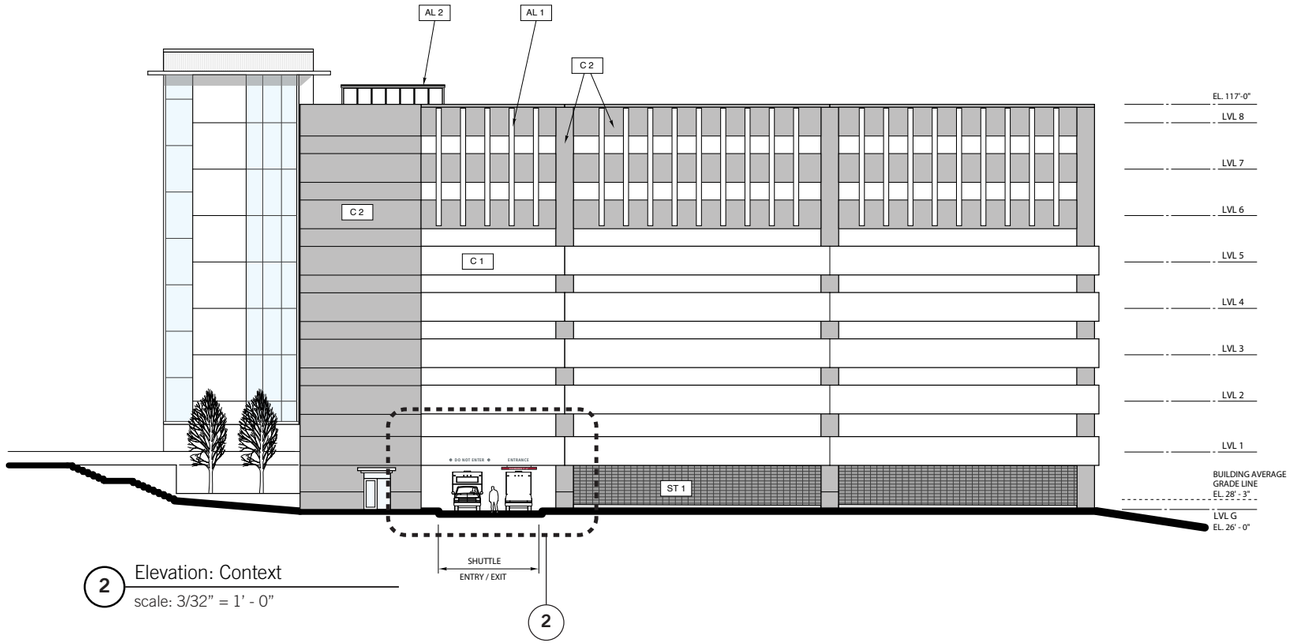
scale: 3/32" = 1' - 0"



1 Elevation: Detail

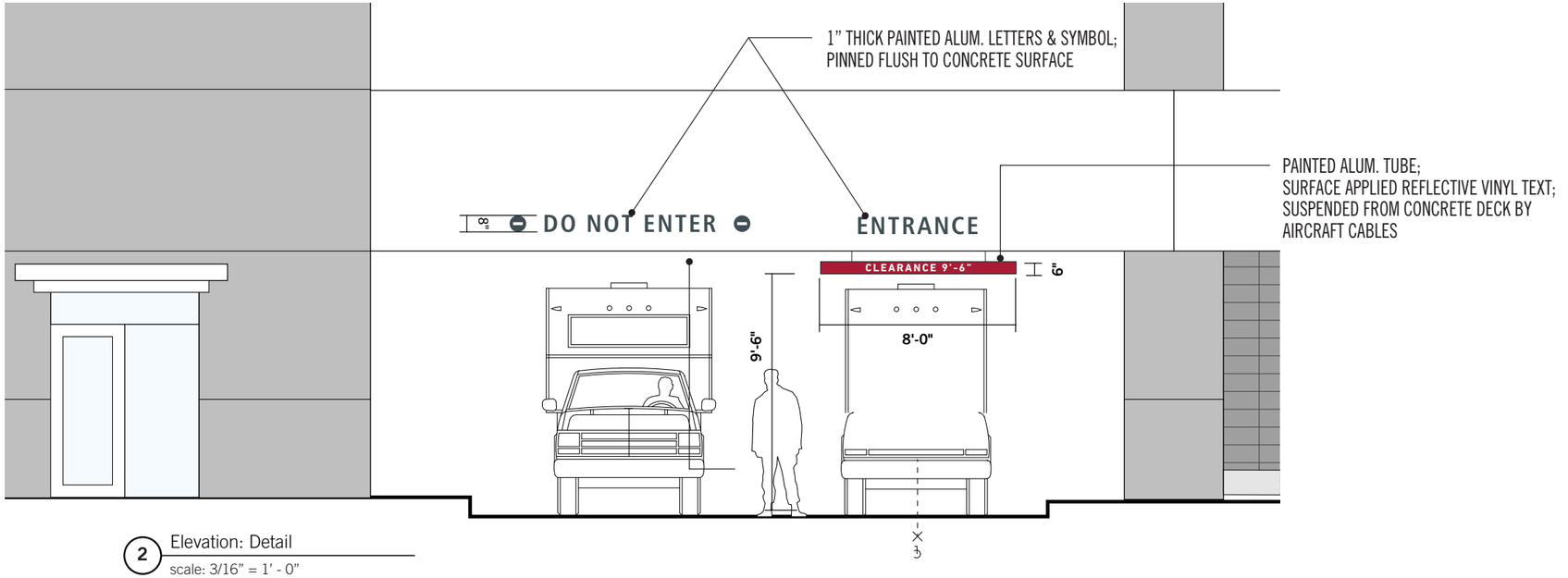
scale: 3/16" = 1' - 0"

EG.3 North Garage ID



2 Elevation: Context

scale: 3/32" = 1' - 0"



2 Elevation: Detail

scale: 3/16" = 1' - 0"

Thank You

Leverage/

Relationships.
Responsiveness.
Results.









Traffic Movement Permit Application
Bramhall Street - 22: MMC Congress Street Building
Portland, Maine

PREPARED FOR:
Maine Medical Center
22 Bramhall Street
Portland, ME 04102

September 2018

SUBMITTED BY:
Gorrill Palmer
707 Sable Oaks Drive
Suite 30
So. Portland, ME 04106
207.772.2515

GORRILL PALMER

707 Sable Oaks Drive, Suite 30
South Portland, Maine 04106
207.772.2515

September 25, 2018

Ms. Nell Donaldson
City of Portland Planning Division
389 Congress Street, 4th Floor
Portland, Maine 04101

RE: Application for Traffic Movement Permit
Maine Medical Center Expansion
Portland, Maine

Dear Ms. Donaldson,

Gorrill Palmer (GP) has been retained by Maine Medical Center to prepare this Traffic Movement Permit Application for the proposed Maine Medical Center expansion project located at the site of the existing Gilman Garage in the southeast corner of the Gilman Street / Congress Street intersection in Portland, Maine.

We have attached the following information in support of this application:

- Sections 1-7
- Signed application form
- Notice of intent to file
- List of abutters
- $1,500 application fee

Section 7 (Traffic Impact Study) of the application is also being submitted under separate cover. Please contact our office with any questions regarding this application.

Sincerely,
Gorrill Palmer

Randy Dunton, PE, PTOE
Project Manager

Copy: Alexander Green, Maine Medical Center
Randy Ilian, MaineDOT Region 1 Traffic Engineer

Department of Transportation
Traffic Engineering Division
16 State House Station
Augusta, Maine 04333
Telephone: 207-287-3775

FOR MDOT USE 12/99
ID#_____

Total Fees:_____
Date Received: _____

****

PERMIT APPLICATION – TRAFFIC
TRAFFIC MOVEMENT PERMIT, 23 M.R.S.A. §704-A

Please type or print:

This application is for (check all that apply): Traffic 100-200 PCE's ☐
Traffic 200 + PCE's ☒

Name of Applicant: Maine Medical Center; Attn: Alexander Green

Address: 22 Bramhall Street, Portland, Maine 04102 Telephone: (207) 662-3689

Name of local contact or agent: **Randy Dunton – Gorrill Palmer**

Address: **707 Sable Oaks Drive, South Portland, ME 04106** Telephone: **(207) 772-2515**

Name and type of development: The Maine Medical Center Expansion includes razing the existing employee parking garage and constructing additional hospital space including new operating rooms and patient rooms, although the total number of beds will remain the same.

Location of development including road, street, or nearest route number: **The site is located at the existing Gilman Street garage and the block bounded by Valley Street, Congress Street, Gilman Street, and A Street.**

City/~~Town~~/~~Plantation~~: **Portland** County: **Cumberland** Tax Maps: **53 & 67** Lots: D007 and H001, H002, H005, H008, and H009.

Do you want a consolidated review with DEP pursuant to 23 M.R.S.A. § 704-A (7)? **No**

Was this development started prior to obtaining a traffic permit? **No**

Is the project located in an area designated as a growth area (as defined in M.R.S.A. title 30-A, chapter 187)?
Yes_____ No _____

Is this project located within a compact area of an urban compact municipality? Yes X No_____

Is this development or any portion of the site currently subject to state or municipal enforcement action?

None Known

Existing DEP or MDOT permit number (if applicable): N/A

Name(s) DOT staff person(s) contacted concerning this application Delegated Review is to the City

Name(s) of DOT staff person(s) present at the scoping meeting for 200+ applicants:_____

Department of Transportation
Traffic Engineering Division
16 State House Station
Augusta, Maine 04333
Telephone: 207-287-3775

FOR MDOT USE 12/99
ID#_____

Total Fees:_____
Date Received: _____

CERTIFICATION

This person responsible for preparing this application and/or attaching pertinent site and traffic information hereto, by signing below, certifies that the applicant for traffic approval is complete and accurate to the best of his/her knowledge.

Signature: Randall E. Dunton Re/Cert/Lic No.: _____

Name (print): **Randall E. Dunton** Engineer: **Maine PE # 8686**

Date: Sept 24, 2018 Other: _____



If the signature below is not the applicant's signature, attach letter of agent authorization signed by applicant.

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

_____ 9/25/2018

Signature of applicant Date

Form C 7/97

NOTICE OF INTENT TO FILE

Please take notice that:

Maine Medical Center
22 Bramhall Street
Portland, ME 04102

is intending to file a MaineDOT Traffic Permit application with the City of Portland (Delegated Review Authority) pursuant to the provisions of 23 M.R.S.A. §704 – A on or about September 25, 2018.

This application is for:

The Congress Street building expansion of Maine Medical Center on Bramhall Street in Portland, Maine. The proposed development is to include razing the existing employee parking garage and constructing additional hospital space including new operating rooms and patient rooms, although the total number of beds will remain the same. A new patient drop-off on Congress Street is also proposed. The project is forecast to generate 68 and 66 AM and PM weekday peak hour trip ends respectively. The project is expected to open in 2023.

At the following location:

The site is located in the southeast corner of the Gilman Street / Congress Street intersection at the site of the existing Gilman Garage.

A request for a public hearing must be received by the City, in writing no later than 20 days after the application is found by the department to be complete and is accepted for processing. Public comment on the application will be accepted throughout the processing of the application.

The application will be filed for public inspection at the Department of Transportation's office in Scarborough (Region 1) during normal working hours. A copy of the application may also be seen at the municipal offices in Portland, Maine.

Written public comments may be sent to the following address: Attention Nell Donaldson, Planning Division, 389 Congress Street, Portland, Maine 04101.

Randall Dunton, P.E., PTOE
Gorrill-Palmer Consulting Engineers, Inc.



ABUTTERS LIST
MMC EXPANSION
PORTLAND, ME
JN 2866.01

CBL	UNITS	PROP_LOC	OWNR_NAME1	OWNR_NAME2	MAIL_ADDR1	OWNR_CITY	WNR_STA	ZIPCODE	ProjectDesc
053 A013001	2	29 BOYNTON ST	HOLLOWAY MICAH L &	HANNAH MONACO JTS	29 BOYNTON ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053 A014001	3	27 BOYNTON ST	KONGO MATTHEW &	ROSE DIJIERI JTS	27 BOYNTON ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053 A015001	3	23 BOYNTON ST	EMPIRE REALTY LLC		17 BOYNTON ST # 1	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053 A017001	3	21 BOYNTON ST	MICHAUD STEPHEN J II &	TAMMY J BEAULIEU JTS	21 BOYNTON ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053 A018001	3	17 BOYNTON ST	EMPIRE REALTY LLC		17 BOYNTON ST # 1	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053 A019001	1	15 BOYNTON ST	MACCONNELL DOUGLAS F &	REBECCA MACCONNELL JTS	340 SOUTH LEMON AVE # 7427	WALNUT	CA	91789	2017002 MMC Master Facility Plan Phase IIE
053 A020001	1	11 BOYNTON ST	KURAN BARBARA LYNN		11 BOYNTON ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053 A021001	2	9 BOYNTON ST	MARCISSO SAMUEL M JR		16 RUBY MAE LN	SCARBOROUGH	ME	04074	2017002 MMC Master Facility Plan Phase IIE
053 A022001	0	232 PARK AVE	HARRIS RICHARD S JR &	PEGGY HARRIS	103 LOUDEN RD	SACO	ME	04072	2017002 MMC Master Facility Plan Phase IIE
053 E003001	44	25 CRESCENT ST	CRESCENT HEIGHTS LLC		PO BOX 4790	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
053 E008001	6	19 CRESCENT ST	19 CRESCENT STREET LLC		26B BRACKETT ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053 H001001	10	9 WESCOTT ST	FISK KENNETT H		43 SPINNAKER LN	FALMOUTH	MA	02540	2017002 MMC Master Facility Plan Phase IIE
053 H002001	0	25 ELLSWORTH ST	BEH REDEVELOPMENT LLC		PO BOX 4790	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
053 H003001	4	23 ELLSWORTH ST	MCCAIN MARK &	KATRINA SCHOLTZ JTS	812-6 CONGRESS ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053 H004001	2	19 ELLSWORTH ST	RAINBOW PARACHUTE LLC		19 ELLSWORTH ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053 H005001	2	2 CRESCENT ST	BOURRET ANDREW P &	EMILY M BOURRET JTS	21 TAINE MOUNTAIN RD	UNIONVILLE	CT	06085	2017002 MMC Master Facility Plan Phase IIE
053 I007001	3	14 BOYNTON ST	MCKEOWN RYAN L		1226 SUNNYMEADE DR	NASHVILLE	TN	37215	2017002 MMC Master Facility Plan Phase IIE
053 I016001	5	879 CONGRESS ST	KONTOS GREGORY C &	CAROL A KONTOS	PO BOX 1785	WINDHAM	ME	04062	2017002 MMC Master Facility Plan Phase IIE
053 I017001	0	873 CONGRESS ST	KONTOS GREGORY C	C/O GCK GROUP	PO BOX 1785	WINDHAM	ME	04062	2017002 MMC Master Facility Plan Phase IIE
053 I019001	7	8 WEYMOUTH ST	GRANTWEY APARTMENTS LIMITE	LIABILITY COMPANY	103 LOUDEN RD	SACO	ME	04072	2017002 MMC Master Facility Plan Phase IIE
053 I020001	9	871 CONGRESS ST	LASH LLC		PO BOX 4182	PORTLAND	ME	04101	2017002 MMC Master Facility Plan Phase IIE
053 I021001	1	867 CONGRESS ST	PORT CITY BAPTIST CHRUCH		867 CONGRESS ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
054 B001001	3	12 ELLSWORTH ST	12 ELLSWORTH STREET LLC		PO BOX 7225	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
054 B002001	5	19 HILL ST	19 HILL STREET LLC		PO BOX 7225	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
054 B004001	8	17 HILL ST	17 HILL STREET LLC		PO BOX 7225	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
054 C001001	2	20 HILL ST	BEH REDEVELOPMENT LLC		PO BOX 4790	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
054 C005001	3	32 ELLSWORTH ST	BEH REDEVELOPMENT LLC		PO BOX 4790	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
054 C007001	2	7 RUSSELL ST	FERRELL RANDY D		7 RUSSELL ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
054 C008001	2	9 RUSSELL ST	WILHOITE ROBERT W ETALS JTS		9 RUSSELL ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
054 C009001	4	11 RUSSELL ST	STEINS KARL M &	RHIANNE STEINS JTS	2333 CAMINO DEL RIO SOUTH STE	SAN DIEGO	CA	92108	2017002 MMC Master Facility Plan Phase IIE
054 C012001	2	15 RUSSELL ST	SHIR MOHAMMAD NASIR		41 OCEAN HOUSE RD	CAPE ELIZABETH	ME	04107	2017002 MMC Master Facility Plan Phase IIE
054 D006001	0	331 BRACKETT ST	BEH REDEVELOPMENT LLC		PO BOX 4790	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
054 D007001	8	325 BRACKETT ST	BEH REDEVELOPMENT LLC		PO BOX 4790	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
063 A001001	1	31 BRAMHALL ST	PETERS ANNE GINDER		31 BRAMHALL ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063 A002001	1	25 BRAMHALL ST	CARREN JOY M ETAL &	GARY LAMSON	PO BOX 9715-327	PORTLAND	ME	04104	2017002 MMC Master Facility Plan Phase IIE
063 A003001	8	23 BRAMHALL ST	PALMER DEVELOPMENT	GROUP LLC	83 SOUTH FREEPORT RD	FREEPORT	ME	04032	2017002 MMC Master Facility Plan Phase IIE
063 A004001	10	19 BRAMHALL ST	NEW EARTH ASSOCIATES LLC		PO BOX 9715-327	PORTLAND	ME	04104	2017002 MMC Master Facility Plan Phase IIE
063 A005001	10	15 BRAMHALL ST	WEST COMPANY		104 GRANT ST	PORTLAND	ME	04101	2017002 MMC Master Facility Plan Phase IIE
063 A006001	1	7 BRAMHALL ST	7 BRAMHALL STREET LLC		335 BRIGHTON AVE	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
064 E001001	4	12 A ST	CUMMINGS THOMAS L HEIRS		12 A ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
064 E014001	4	36 GILMAN ST	LAMBERT STUART C		36 GILMAN ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
064 E015001	4	34 GILMAN ST	AWLARI IWANI M &	LIA BOULIS KODI JTS	34 GILMAN ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
064 E016001	4	28 GILMAN ST	SABBATH NICHOLAS M		28 GILMAN ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
064 E017001	3	24 GILMAN ST	SNYDER KAREN L		72 WATERVILLE ST # 3	PORTLAND	ME	04103	2017002 MMC Master Facility Plan Phase IIE
064 E018001	5	20 GILMAN ST	SS MINNOW LLC &	PUTTERS LLC	22 BARLEY LN	SCARBOROUGH	ME	04074	2017002 MMC Master Facility Plan Phase IIE
064 E019001	6	16 GILMAN ST	SEA OTTER 16G LIMITED	LIABILITY COMPANY	39 COVESIDE LN	YARMOUTH	ME	04096	2017002 MMC Master Facility Plan Phase IIE
064 E020001	8	12 GILMAN ST	12 GILMAN STREET LLC		295 BROWN ST STE 1	WESTBROOK	ME	04092	2017002 MMC Master Facility Plan Phase IIE
064 E021001	4	10 GILMAN ST	10 GILMAN STREET LLC		40 WOODFIELD DR	SCARBOROUGH	ME	04074	2017002 MMC Master Facility Plan Phase IIE
064 E022001	1	10 A ST	STICKNEY BRIAN J		10 A ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
064 E023001	3	4 GILMAN ST	HOCHSTEDLER ANNA F &	MOISES T SABINA JTS	4 GILMAN ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
064 E025001	1	8 A ST	MACKENZIE JENNIFER A &	GARRY J BOWCOTT	8 A ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
064 E028001	1	4 GILMAN PL	FOX STEPHEN H		4 GILMAN PL	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
064 E029001	3	3 GILMAN PL	FOX STEPHEN H		4 GILMAN PL	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
065 D014001	1	931 CONGRESS ST	CR VENTURES LLC		302 CHANDLER'S WHARF	PORTLAND	ME	04101	2017002 MMC Master Facility Plan Phase IIE
065 D016001	1	925 CONGRESS ST	WORAMALEE SAENGTONG		921 CONGRESS ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
065 D017001	2	921 CONGRESS ST	WORAMALEE SAENGTONG		921 CONGRESS ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
065 E017001	1	24 FOREST ST	CAREY MEGHAN		24 FOREST ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
065 E019001	0	22 FOREST ST	EAST END DEVELOPMENT LLC		PO BOX 10291	PORTLAND	ME	04104	2017002 MMC Master Facility Plan Phase IIE
065 E021001	0	18 FOREST ST	EAST END DEVELOPMENT LLC		PO BOX 10291	PORTLAND	ME	04104	2017002 MMC Master Facility Plan Phase IIE
065 E023001	0	14 FOREST ST	EAST END CORP		ONE CANAL PLAZA	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
065 E025001	12	12 FOREST ST	EAST END CORP		PO BOX 10291	PORTLAND	ME	04104	2017002 MMC Master Facility Plan Phase IIE
065 E028001	1	919 CONGRESS ST	EAST END CORP		PO BOX 10291	PORTLAND	ME	04104	2017002 MMC Master Facility Plan Phase IIE
065 E030001	0	909 CONGRESS ST	EAST END HOLDINGS LLC		PO BOX 10291	PORTLAND	ME	04104	2017002 MMC Master Facility Plan Phase IIE

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JN 2866.01

065	G002001	3	942 CONGRESS ST	TPA ASSOCIATES		940 CONGRESS ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
065	G003001	0	VALLEY ST	TPA ASSOCIATES		940 CONGRESS ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
065	G004001	3	274 VALLEY ST	JORDAN ROBERT K TRUSTEE		1050 ISLAND AVE	LONG ISLAND	ME	04050	2017002 MMC Master Facility Plan Phase IIE
054	E001001	9	59 BRAMHALL ST	BJB REALTY LLC		PO BOX 6842	PORTLAND	ME	04103	2017002 MMC Master Facility Plan Phase IIE
054	E010001	4	315 BRACKETT ST	315 BRACKETT STREET LLC		55 D ST	SOUTH PORTLAND	ME	04106	2017002 MMC Master Facility Plan Phase IIE
054	E011001	5	311 BRACKETT ST	JOBI PROPERTIES LLC		16 CHARLOTTE DR	FALMOUTH	ME	04105	2017002 MMC Master Facility Plan Phase IIE
054	F033001	7	249 VAUGHAN ST	PARKER VAUGHAN STREET LLC		249 VAUGHAN ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
054	F034001	5	303 BRACKETT ST	303 BRACKETT LLC		PO BOX 2301	SOUTH PORTLAND	ME	04116	2017002 MMC Master Facility Plan Phase IIE
063	A015001	1	146 CHADWICK ST	ISERBYT SAMUEL T		146 CHADWICK ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	A016001	5	140 CHADWICK ST	NEWFANGLED CAPITAL LLC		140 CHADWICK ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	A018001	1	132 CHADWICK ST	BOYD MARJORIE ANN		132 CHADWICK ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	B001001	36	135 CHADWICK ST	BOWDOIN REALTY LLC		131 CHADWICK ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	B009001	1	212 VAUGHAN ST	BLANK CHERYL L		212 VAUGHAN ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	B010001	2	208 VAUGHAN ST	210 VAUGHAN STREET LLC		81 COUSINS RD	BUXTON	ME	04093	2017002 MMC Master Facility Plan Phase IIE
063	C001001	1	304 BRACKETT ST	HENNIGAR CHRISTOPHER G		405 WESTERN AVE	SOUTH PORTLAND	ME	04106	2017002 MMC Master Facility Plan Phase IIE
063	C004001	1	233 VAUGHAN ST	VAUGHAN STREET REALTY	ASSOCIATES	233 VAUGHAN ST	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	C006001	1	217 VAUGHAN ST UNIT 1	SMITH LORI L		217 VAUGHAN ST # 1	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	C006002	1	217 VAUGHAN ST UNIT 2	WHORF STEVEN C &		DHL EXPRESS ASIA PACIFIC REGI	819458 SINGAPORE			2017002 MMC Master Facility Plan Phase IIE
063	C006003	1	217 VAUGHAN ST UNIT 3	TEDESCO THEODORE M &	MARILYN M TEDESCO	217 VAUGHAN ST # 3	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	C006004	1	217 VAUGHAN ST UNIT 4	MAIN CHARLES D &	JUDITH Z MAIN JTS	36 LONGFELLOW W AVE	BRUNSWICK	ME	04011	2017002 MMC Master Facility Plan Phase IIE
063	C006005	1	217 VAUGHAN ST UNIT 5	GALLO JORDAN L &	JACLYN R GALLO JTS	217 VAUGHAN ST # 5	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	C006006	1	217 VAUGHAN ST UNIT 6	BIBERSTEIN KATHRYN L		43 BYRAM AVE	FREEPORT	ME	04032	2017002 MMC Master Facility Plan Phase IIE

UPON REVIEW OF ABOVE ABUTTERS LIST PROVIDED BY MMC WITH CITY'S TAX MAPS; WE HAVE ADDED THE FOLLOWING ABUTTERS:

								2017002 MMC Master Facility Plan Phase IIE
053	E005	25 CRESCENT ST	CRESCENT HEIGHTS LLC	PO BOX 4790	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
053	E013	868 CONGRESS ST	MMC	22 BRAMHALL STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053	E014	25 CRESCENT ST	CRESCENT HEIGHTS LLC	PO BOX 4790	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
053	E015	25 CRESCENT ST	CRESCENT HEIGHTS LLC	PO BOX 4790	PORTLAND	ME	04112	2017002 MMC Master Facility Plan Phase IIE
053	H006	9 WESCOTT ST	KENNETT FISK	43 SPINNAKER LANE	FALMOUTH	MA	02540	2017002 MMC Master Facility Plan Phase IIE
053	I001	887 CONGRESS ST	MMC	22 BRAMHALL STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053	I002	887 CONGRESS ST	MMC	22 BRAMHALL STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053	I003	887 CONGRESS ST	MMC	22 BRAMHALL STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053	I007	14 BOYNTON ST	MCKEOWN RYAN	1226 SUNNYMEADOW DRIVE	NASHVILLE	TN	37215	2017002 MMC Master Facility Plan Phase IIE
053	I012	887 CONGRESS ST	MMC	22 BRAMHALL STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
053	X001	19 FOREST ST	MMC / CAT-WALK					2017002 MMC Master Facility Plan Phase IIE
054	C006	34 ELLSWORTH ST	MMC	22 BRAMHALL STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
054	C010	40 ELLSWORTH ST	MMC	22 BRAMHALL STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
054	D005	46 BRAMHALL ST	YENTSCH CARLTON	PO BOX 254	W. BOOTHBAY HBR	ME	04575-025	2017002 MMC Master Facility Plan Phase IIE
054	E009	47 BRAMHALL ST	MMC					2017002 MMC Master Facility Plan Phase IIE
054	I001	308 BRACKETT ST	MMC	22 BRAMHALL STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	A007	7 BRAMHALL ST	7 BRAMHALL STREET LLC	160 ANN MARY BROWN DRIVE	WARWICK	RI	02888	2017002 MMC Master Facility Plan Phase IIE
063	A008	265 WESTERN PROMENAD	COPE SAMUEL & SARA	265 WEST PROMENADE	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	A017	132 CHADWICK ST	MARGERY ANN BOYD	132 CHADWICK STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	B008	214 VAUGHAN ST	MMC	22 BRAMHALL STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	C005	229 VAUGHAN ST	MMC	22 BRAMHALL STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
063	C007	217 VAUGHAN ST	BIBERSTEIN KATHRYN	43 BYRAM AVENUE	FREEPORT	ME	04032	2017002 MMC Master Facility Plan Phase IIE
063	C008	217 VAUGHAN ST	BIBERSTEIN KATHRYN	43 BYRAM AVENUE	FREEPORT	ME	04032	2017002 MMC Master Facility Plan Phase IIE
064	B002	264 VALLEY ST	MMC	22 BRAMHALL STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE
064	D011	254 VALLEY ST	STICKNEY ADAM	254 VALLEY STREET	PORTLAND	ME	04101	2017002 MMC Master Facility Plan Phase IIE
064	E024	51 VALLEY ST	CITY OF PORTLAND - LAND BANK	389 CONGRESS STREET	PORTLAND	ME	04101	2017002 MMC Master Facility Plan Phase IIE
065	C001	939 CONGRESS ST	THE INN AT ST. JOHN	939 CONGRESS STREET	PORTLAND	ME	04101	2017002 MMC Master Facility Plan Phase IIE
065	C002	947 CONGRESS ST	LI RI TENG & WEI YI WANG	PO BOX 495	MOODY	ME	04054-049	2017002 MMC Master Facility Plan Phase IIE
065	C009	937 CONGRESS ST	MARDIGAN STEPHEN	460 BAXTER BOULEVARD	PORTLAND	ME	04101	2017002 MMC Master Facility Plan Phase IIE
065	E029	909 CONGRESS ST	EAST END HOLDINGS LLC	PO BOX 10291	PORTLAND	ME	04104	2017002 MMC Master Facility Plan Phase IIE
065	G005	0 VALLEY ST	MMC	22 BRAMHALL STREET	PORTLAND	ME	04102	2017002 MMC Master Facility Plan Phase IIE

- ALL PROPERTIES OWNED BY MAINE MEDICAL CENTER - DO NOT SEND ABUTTERS NOTICES - INCLUDED FOR INFORMATION PURPOSES ONLY

Section 1
Site and Traffic Information

1.A. Site Description and Site Plan

The proposed project is located at the site of the existing Gilman Garage for Maine Medical Center employees on Congress Street and the southeast corner of the Gilman Street / Congress Street intersection. The site is identified on City Tax Map 53, Lot D007, and City Tax Map 65 Lots H001, H002, H005, H008, and H009. A proposed site plan is included in the site plan application submitted under separate cover.

1.B. Existing and Proposed Site Uses

The existing site is the Gilman parking garage for the employees of Maine Medical Center. The proposed project consists of razing the existing employee garage and constructing additional hospital space, including new private universal patient rooms, procedure rooms, a new hospital entrance, and a new drop off area with a connection to the visitor garage. Although the expansion will include new patient rooms, the project will optimize the current bed capacity, and is not proposed to add any beds. Vehicular access to the hospital expansion will be expanded to include a new entrance on Congress Street and a new patient drop-off area with a direct connection to the visitor garage. Employees who park in the existing employee parking garage will park in the larger proposed employee parking garage on St. John Street with approximately 2,400 spaces. It should be noted that of the approximately 2,400 spaces, 50 are will be reserved for the Eagles and approximately 200 are reserved for the tenants of 222 St. John Street. There will be many shuttles that run throughout the day to transport employees to and from the parking garage from Maine Medical Center. The project is proposed to increase the number of employees by 200 between 2016 and 2023.

1.C. Site Vicinity and Boundaries

The entire site is bordered by Congress Street to the north, Wescott Street to the east, the Bramhall Street to the south, and Gilman Street to the west. A site location map showing the development area is included in Attachment 1A.

1.D. Proposed Uses in the Vicinity of the Proposed Development

Approved projects that are not yet opened as well as projects for which applications have been filed are required to be included in the predevelopment volumes for this project. Based on conversations with City Staff, the traffic from these projects that is forecast to impact the Maine Medical Center Expansion study area is discussed in Section 7 (Traffic Impact Study).

1.E. Trip Generation

The trip generation for the proposed expansion was calculated using the Institute of Transportation Engineers' (ITE) publication, *Trip Generation*, Seventh Edition, Land Use Code (LUC) 610 – Hospital. The Tenth Edition is available, but has not yet been accepted by the MaineDOT. The expansion is proposed to be a total of 265,000 sf and it is anticipated to add 200 employees (including employees, students, and physicians). As approved at the October 13, 2017 Pre-Scoping meeting with the City, the trip generation for the expansion is based on the number of employees, students, and physicians. The following is a summary of the trip generation for the expansion that will need to be permitted:

- AM Peak Hour Adjacent Street: 68 trip ends
- PM Peak Hour Adjacent Street: 66 trip ends
- AM Peak Hour of Generator: 78 trip ends
- PM Peak Hour of Generator: 94 trip ends
- Saturday Peak Hour of Generator: 106 trip ends

A trip end is defined as a trip into or out of the site; thus, a round trip is equal to two trip ends. Since the forecast traffic exceeds 99 trip ends during a peak hour, a Traffic Movement Permit is required. The City of Portland has delegated review authority, so the application can be administered by the City. A copy of the trip generation calculations are included as an attachment to this section.

1.F. Trip Distribution

Based on ITE's *Trip Generation*, the following trip distribution is anticipated:

- AM Peak Hour Adjacent Street: 54 in / 14 out
- PM Peak Hour Adjacent Street: 23 in / 43 out

- AM Peak Hour of Generator: 51 in / 27 out
- PM Peak Hour of Generator: 38 in / 56 out
- Saturday Peak Hour of Generator: 58 in / 48 out

1.G. Trip Composition and Assignment

GP has assumed that all trips are primary in nature and made for the sole purpose of going to and from the site. The trips will also be comprised of both employees and patients/visitors. The portion of the trip generation that is forecast to be due to patients/visitors has been based on information provided by MMC Staff in an email dated August 8, 2018. Based on MMC's information, an additional 15,500 patient trips are anticipated annually by 2023. Based on discussions with MMC, the distribution of the patient/visitors has been based on the following assumptions:

- Patient trips are split evenly throughout the year
- 90% of patient trips occur Monday through Friday
- Patient trips are evenly split through the week
- 20% of daily trips occur during the peak hours
- 80% entering during the AM peak hour
- 80% exiting during the PM peak hour

Based on these assumptions, the following trip composition is forecast for the peak hours of the adjacent street:

- AM Peak Hour Adjacent Street (assumed 7:30AM – 8:30AM):
  - Patients/Visitors: 10 trip ends (8 in / 2 out)
  - Employees: 58 trip ends (46 in / 12 out)
- PM Peak Hour Adjacent Street (assumed 4:15PM – 5:15PM):
  - Patients/Visitors: 10 trip ends (2 in / 8 out)
  - Employees: 56 trip ends (21 in / 35 out)

The trip assignment for the employees has been based on the VHB Travelshed (attached) for employees, previously reviewed by the City. The patient/visitor trip assignment has been based on the proposed driveway locations, information from MMC in an email dated August 8, 2018, and the existing traffic patterns. The trip assignment is discussed in more detail in Section 7 of this application.

1.H. Attachments

Attachment 1A – Site Location Map, Trip Assignment Diagram, VHB Travelshed
Attachment 1B – Trip Generation Calculations

Attachment 1A

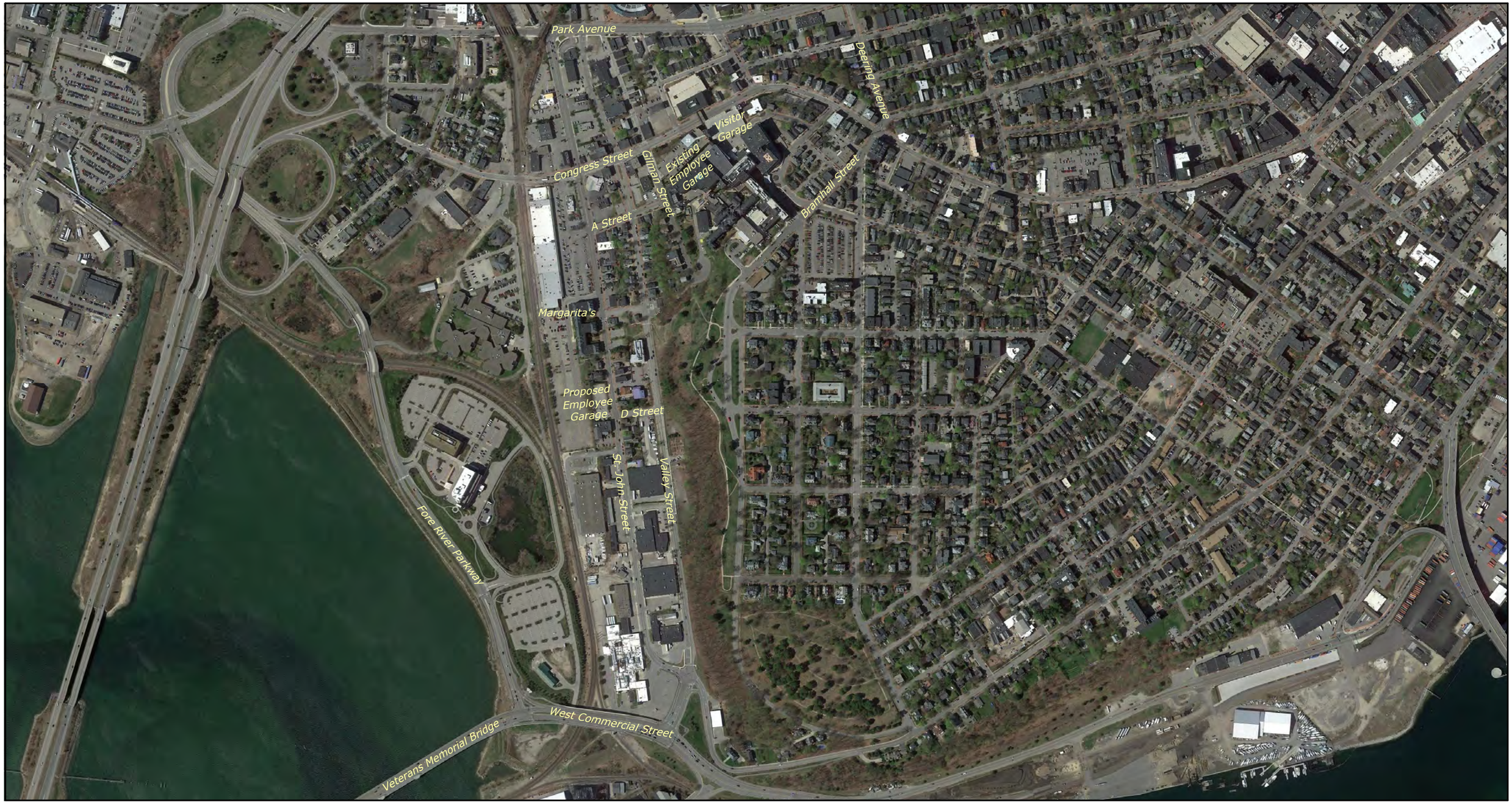
Site Location Map

Trip Assignment Diagram

VHB Travelshed

Location Map

Figure No. 1



Bramhall St. - 22; MMC Congress Street Building
PORTLAND, MAINE

Design:	EAL	Scale:	NONE
Draft:		Date:	SEP 2018
Checked:	RED	File Name:	28866.01 - TIS Figures

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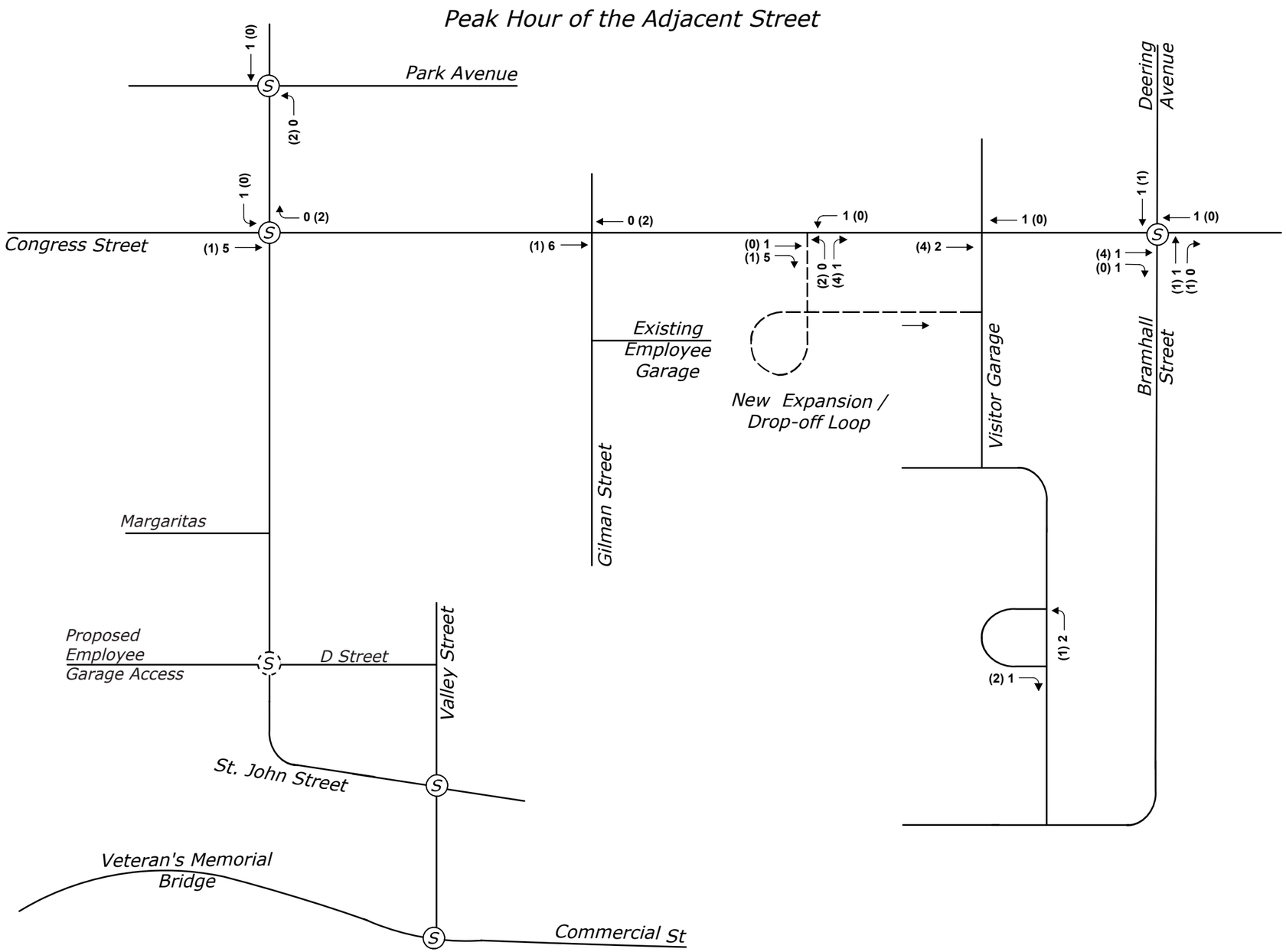
Phase 3 Patient/Visitor Assignment

Figure No. 6



Bramhall St. - 22; MMC Congress Street Building
PORTLAND, MAINE

Design: EAL Scale: NONE
Draft: Date: SEP 2018
Checked: RED File Name: 28866.01 - TIS Figures

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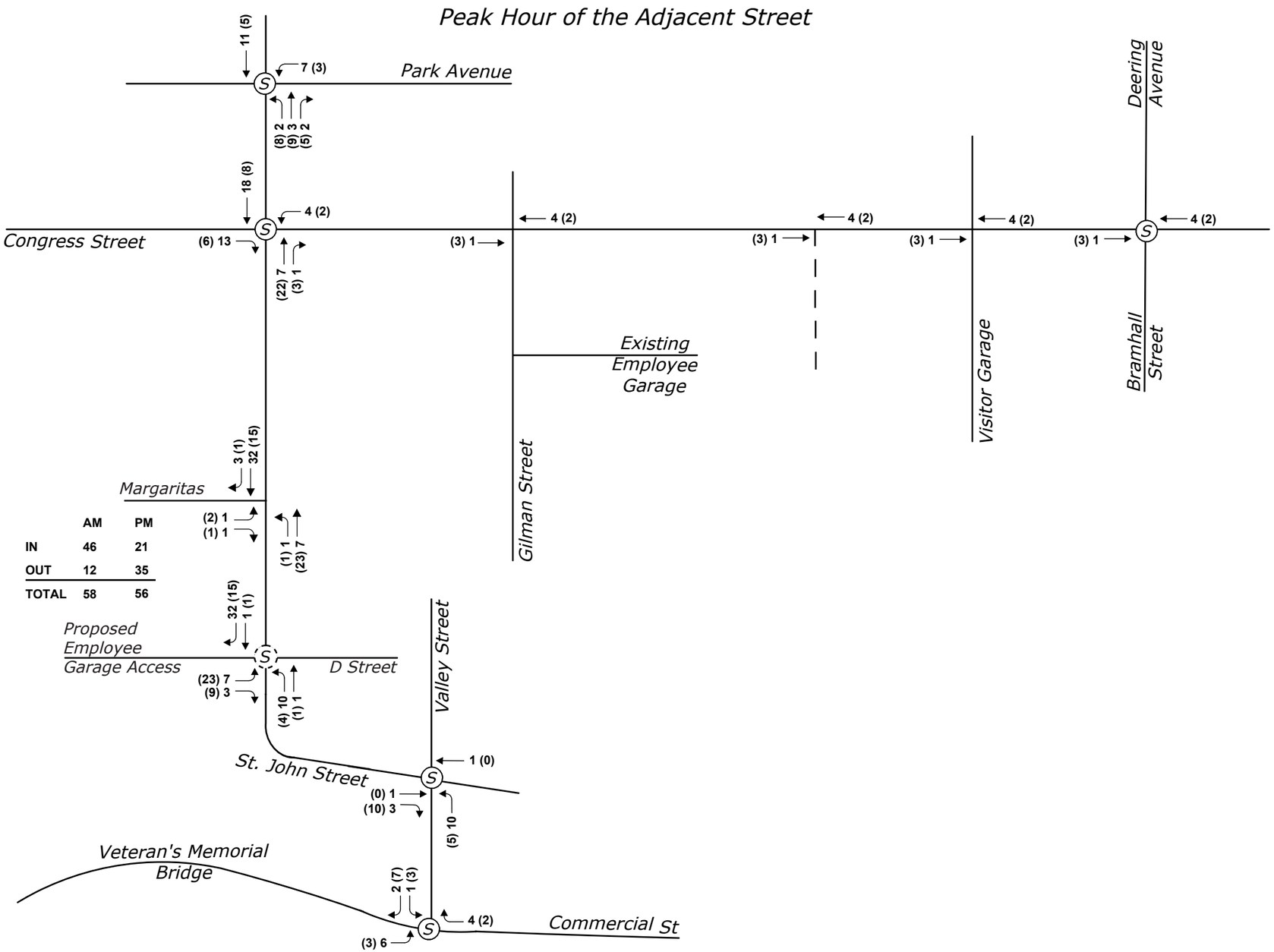
Phase 3 Employee Trip Assignment

Figure No. 7



Bramhall St. - 22; MMC Congress Street Building
PORTLAND, MAINE

Design: EAL Scale: NONE
Draft: Date: SEP 2018
Checked: RED File Name: 28866.01 - TIS Figures

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LEGEND

Bramhall Employees	1 mile	Travelshed
<1 mile	3 miles	295 North
1-3 miles	5 miles	35 - 302 - 117 North
3-5 miles	10 miles	95 North
5-10 miles	20 miles	95 South
10-20 miles	30 miles	Ferries
20-30 miles	40 miles	Peninsular Surface Streets
30-40 miles	50 miles	Rt 25 - Brighton Ave
40-50 miles		South Portland Surface Streets
>50 miles		Maine Medical Center

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Bramhall Employee Address Locations and Travelsheds
Maine Medical Center

vhb

0 2.5 5 Miles

Attachment 1B

Trip Generation Calculations

JN: 2866.01
Project Description: Maine Medical Center Phase 3
Project Location: Portland, ME
Date: 08/14/18

Gorrill Palmer
707 Sable Oaks Drive
Suite 30
South Portland, Maine 04106

Hospital
Land Use Code (LUC) 610

Employees 200

Fitted Curve:

Time Period	ITE Trip Rate	Trip Ends	Directional Split* IN	Directional Split* OUT	Directional Distribution IN	Directional Distribution OUT	Sample Size/R2
Weekday	T =4.40 (X) + 711.46	1591	50%	50%	796	795	19/.77
AM Peak Adjacent Street	T =0.32 (X) + 35.15	99	80%	20%	79	20	9/.77
PM Peak Adjacent Street	T =0.28 (X) + 75.75	132	35%	65%	46	86	8/.69
AM Peak of Generator	T = 0.33 (X) +66.57	133	65%	35%	86	47	8/.83
PM Peak of Generator	T = 0..36 (X) + 97.41	169	40%	60%	68	101	15/.73
Saturday	T = 2.95 (X)+ 691.43	1281	50%	50%	641	640	15/.84
Saturday Peak of Generator	Not given	-	55%	45%	-	-	4

* Percentages rounded to nearest 5%

Average Rate:

Time Period	ITE Trip Rate	Trip Ends	Directional Split* IN	Directional Split* OUT	Directional Distribution IN	Directional Distribution OUT	Sample Size
Weekday	**T = 5.2 (X)**	**1040**	**50%**	**50%**	**520**	**520**	**19**
AM Peak Adjacent Street	**T = 0.34 (X)**	**68**	**80%**	**20%**	**54**	**14**	**9**
PM Peak Adjacent Street	**T = 0.33 (X)**	**66**	**35%**	**65%**	**23**	**43**	**8**
AM Peak of Generator	**T = 0.39 (X)**	**78**	**65%**	**35%**	**51**	**27**	**8**
PM Peak of Generator	**T = 0.47 (X)**	**94**	**40%**	**60%**	**38**	**56**	**15**
Saturday	**T = 3.78 (X)**	**756**	**50%**	**50%**	**378**	**378**	**15**
Saturday Peak of Generator	**T = 0.53 (X)**	**106**	**55%**	**45%**	**58**	**48**	**4**

* Percentages rounded to nearest 5%

Section 2
Traffic Crashes

2.A. Crash Summary Data

Gorrill Palmer obtained the crash data from MaineDOT for the period of 2015-2017, the most recent period available (Attachment 2A).

In order to evaluate whether a location has a crash problem, MaineDOT uses two criteria to define a High Crash Location (HCL). Both criteria must be met in order to be classified as an HCL.

1. A critical rate factor of 1.00 or more for a three-year period. (A Critical Rate Factor {CRF} compares the actual crash rate to the rate for similar intersections in the state. A CRF of less than 1.00 indicates a rate of less than average) **and:**

2. A minimum of eight crashes over the same three year period.

Based on the crash data provided by MaineDOT, there are eight high crash locations in the vicinity of the study area:

- Intersection of Park Avenue with Valley Street
- Intersection of Congress Street with Gilman Street
- Intersection of St. John Street with A Street
- Intersection of Park Avenue with St. John Street
- Valley Street from A Street to C Street
- Congress Street from Forest Street to Weymouth Street
- St. John Street from Congress Street to Non-Intersection (just south of Park Avenue)

To better evaluate the high crash locations and identify correctable crash patterns, the police reports for these locations were provided by MaineDOT and used to create collision diagrams, included as Attachment 2A to this section. The following discusses the high crash locations as well as pedestrian and bicycle crashes in more detail.

High Crash Locations

The following describes the HCLs in more detail.

Park Avenue / Valley Street

This intersection has a CRF of 1.80 and experienced 10 collisions during the most recent three-year period. It is an unsignalized intersection that is STOP controlled on Valley Street with free flowing traffic on Park Avenue. The northbound Valley Street approach is one-way into the intersection.

There is one crash pattern at this intersection involving vehicles turning left from northbound Valley Street onto westbound Park Avenue and colliding with vehicles traveling westbound on Park Avenue. Additionally, one collision that occurred at this intersection involved a pedestrian and one that involved a bicyclist. The traffic from the proposed MMC expansion is not expected to exacerbate this pattern.

Congress Street / Gilman Street

This intersection has a CRF of 3.26 and experienced 20 collisions during the most recent three-year period. It is an unsignalized intersection that is STOP controlled on the Gilman Street approaches with free flowing traffic on Congress Street. The southbound Gilman Street approach is one-way into the intersection. Based on a review of the collision diagram there are three crash patterns at this intersection; southbound through traffic on Gilman Street failing to yield to eastbound through traffic on Congress Street, southbound through traffic on Gilman Street failing to yield to westbound through traffic on Congress Street, and rear end collisions involving eastbound Congress Street traffic.

There were four collisions that involved southbound through traffic on Gilman Street failing to yield the right of way to the eastbound through traffic on Congress Street and three collisions that involved vehicles coming from the same direction failing to yield the right of way to westbound through traffic on Congress Street. These types of collisions may be due to the buildings along Congress Street blocking the sight distance of the southbound traffic. Because the MMC employee parking is being relocated to St. John Street, both the AM and PM total entering traffic volume for this intersection will be decreased from the Predevelopment condition to the Postdevelopment condition.

There were three rear end collisions on Congress Street eastbound. All three were caused by drivers following too closely and/or driver inattention. Additionally, all three collisions involved vehicles stopping for pedestrians in the crosswalk.

St. John Street / A Street

This intersection has a CRF of 1.82 and experienced 8 collisions during the most recent three-year period. It is an unsignalized four-leg intersection with two-way traffic on all approaches. Based on a review of the collision diagram, there were no correctable crash patterns identified at this intersection.

Park Avenue / St. John Street

This intersection has a CRF of 1.63 and experienced 36 collisions during the most recent three-year period. It is a signalized four-leg intersection with two-way traffic on all approaches, with the exception of Park Avenue to the east of St. John Street, which is one way away from the intersection. Based on a review of the collision diagram, there are four crash patterns at this intersection.

One crash pattern involved vehicles in the northbound St. John Street left turn lane attempting to go straight through the intersection from the left-most lane and colliding with left turning vehicles in the adjacent left-through lane. There were 13 such crashes at this intersection during the most recent three year period. Most of the drivers that incorrectly attempted to travel through the intersection claimed that they believed they could travel through the intersection from that lane.

Another crash pattern was northbound left turning vehicles sideswiping one another while traveling in the left turn lane and left-through lane from the northbound St. John Street approach to the intersection. Six of these crashes occurred at this intersection during the most recent three year period. There is already a skip line striping between the left turn lane and the left-through lane through the intersection. Many of the crashes involved in the two crash patterns discussed at this intersection so far occurred either during the winter or in the spring when the striping of the skip line may have faded away.

A third crash pattern at this intersection involves right angle collisions between westbound through vehicles on Park Avenue failing to yield to northbound through vehicles on St. John Street. Three of these crashes occurred at this intersection during the most recent three year period. All three collisions involved the westbound Park Avenue vehicle running the red light.

The fourth crash pattern at this intersection involved rear-end collisions involving vehicles at the northbound approach to this intersection. One potential contributing factor to rear end collisions at signalized intersections is inadequate signal clearance times.

Valley Street from A Street to C Street

This intersection has a CRF of 2.89 and experienced 8 collisions during the most recent three-year period. There were no correctable crash patterns identified, however there were five crashes involving parked vehicles. Of the five crashes involving parked vehicles, three crashes involved vehicles that were parked illegally. Stricter enforcement of the parking regulations may help reduce the number of crashes along this segment of Valley Street. It should also be noted that there was one crash involving a pedestrian at this location during the most recent three year period.

Congress Street from Forest Street to Weymouth Street

This section of Congress Street has a CRF of 1.45 and experienced 10 collisions during the most recent three-year period. Based on a review of the collision diagram there is one crash pattern of rear end collisions in the eastbound direction. Of the 10 collisions, five were rear end collisions on Congress Street eastbound. The five collisions were caused by drivers following too closely. There are multiple driveways in this roadway segment, including an entrance to the Maine Medical Center visitor parking garage.

An overall review of the collisions showed that there were 9 collisions that occurred on a weekday and of those, 2 occurred during the AM peak commuter hour and 4 occurred during the PM peak commuter hour, when traffic volumes are heaviest. Additionally, one of the collisions that occurred in this area involved a bicyclist.

Restriping of this section of Congress Street to include a center turn lane may be an alternative to be pursued to improve this section of Congress Street.

St. John Street from Congress Street to Non-Intersection (just south of Park Avenue)

This section of St. John Street has a CRF of 3.00 and experienced 30 collisions during the most recent three-year period. Based on a review of the collision diagram, there are two crash patterns.

The first crash pattern involves sideswipe crashes involving vehicles traveling northbound on St. John Street, which are caused by vehicles making lane changes.

Of the 30 collisions, 17 involved vehicles attempting to turn left onto St. John Street from various driveways. There are many driveways on this link of St. John Street including McDonald's, Amato's, Sullivan Tire, Dunkin' Donuts, Lang's Express, Salty Sally's Bare and Grille and Portland Physical Therapy. Of the 30 crashes in this roadway segment, two involved left turns into driveways from St. John Street.

In a recent Traffic Impact Study completed by Maine Traffic Resources for a Dunkin Donuts relocation project in this section of St. John Street, a "road diet" was recommended that would include a single travel lane in each direction with a center turn lane. Gorrill Palmer supports that recommendation.

Pedestrian Collisions

There were 22 collisions involving pedestrians throughout the study area. Of those, 15 occurred when the pedestrian was within the marked crosswalk, seven of which involved one vehicle rear ending another that was yielding to the pedestrian. Several of the collisions involved pedestrians crossing without the walk sign at a signalized intersection,

or abruptly entering the intersection. Others involved vehicles failing to yield to the pedestrians in the crosswalks.

Bicycle Collisions

There were 9 collisions involving bicyclists throughout the study area. One collision involved a bicyclist riding in a bike lane being struck by a turning vehicle on Park Avenue. Several of the collisions involved bicyclists riding in the roadway, but not following traffic rules.

2.B. Attachments

Attachment 2A – Crash Report, Collision Diagrams

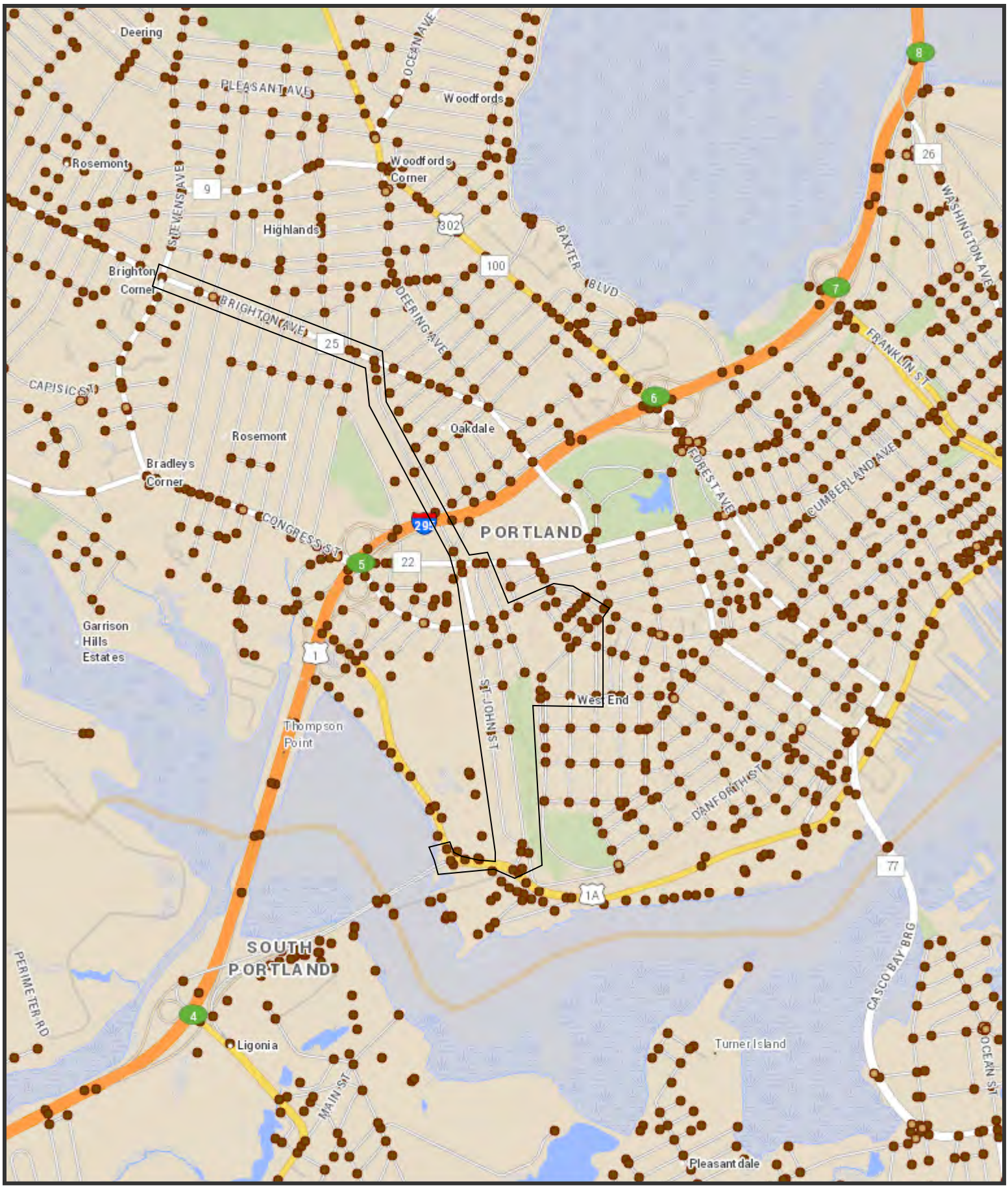
Attachment 2A

Node Map

Crash History

Collision Diagrams

PORTLAND NODE MAP PAGE 1



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0.4 Miles

1 inch = 0.45 miles

Date: 8/8/2018
Time: 4:08:26 PM

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☑ 1320 Summary

REPORT DESCRIPTION

Portland
Brighton Ave., St. John St., Congress St. Area

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

Route: 0001A	Start Node: 66546	Start Offset: 0	☐ Exclude First Node
	End Node: 16747	End Offset: 0	☐ Exclude Last Node
Route: 001AS	Start Node: 16747	Start Offset: 0	☑ Exclude First Node
	End Node: 66542	End Offset: 0	☑ Exclude Last Node
Route: 3209586	Start Node: 66548	Start Offset: 0	☑ Exclude First Node
	End Node: 66546	End Offset: 0	☑ Exclude Last Node
Route: 3201019	Start Node: 16747	Start Offset: 0	☑ Exclude First Node
	End Node: 16753	End Offset: 0	☐ Exclude Last Node
Route: 3209776	Start Node: 16752	Start Offset: 0	☑ Exclude First Node
	End Node: 67695	End Offset: 0	☑ Exclude Last Node
Route: 0560191	Start Node: 67749	Start Offset: 0	☐ Exclude First Node
	End Node: 16748	End Offset: 0	☑ Exclude Last Node
Route: 3209812	Start Node: 67750	Start Offset: 0	☑ Exclude First Node
	End Node: 67749	End Offset: 0	☑ Exclude Last Node
Route: 0560314	Start Node: 19081	Start Offset: 0	☐ Exclude First Node
	End Node: 19079	End Offset: 0	☐ Exclude Last Node
Route: 0560001	Start Node: 19080	Start Offset: 0	☑ Exclude First Node
	End Node: 16751	End Offset: 0	☑ Exclude Last Node
Route: 0560100	Start Node: 16750	Start Offset: 0	☑ Exclude First Node
	End Node: 16763	End Offset: 0	☑ Exclude Last Node

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☑ 1320 Summary

REPORT DESCRIPTION

Portland
Brighton Ave., St. John St., Congress St. Area

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

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Route: 0560160	Start Node: 16825	Start Offset: 0	☐ Exclude First Node
	End Node: 18571	End Offset: 0	☑ Exclude Last Node
Route: 0560160	Start Node: 18571	Start Offset: 0	☑ Exclude First Node
	End Node: 16752	End Offset: 0	☑ Exclude Last Node
Route: 0560160	Start Node: 16752	Start Offset: 0	☑ Exclude First Node
	End Node: 16765	End Offset: 0	☑ Exclude Last Node
Route: 0560077	Start Node: 16825	Start Offset: 0	☑ Exclude First Node
	End Node: 12625	End Offset: 0	☐ Exclude Last Node
Route: 0560785	Start Node: 12751	Start Offset: 0	☑ Exclude First Node
	End Node: 12625	End Offset: 0	☑ Exclude Last Node
Route: 0560782	Start Node: 71553	Start Offset: 0	☐ Exclude First Node
	End Node: 12751	End Offset: 0	☑ Exclude Last Node
Route: 3200519	Start Node: 60369	Start Offset: 0	☑ Exclude First Node
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Route: 0560124	Start Node: 12602	Start Offset: 0	☑ Exclude First Node
	End Node: 12603	End Offset: 0	☑ Exclude Last Node

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☑ 1320 Summary

REPORT DESCRIPTION

Portland
Brighton Ave., St. John St., Congress St. Area

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

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Route: 0560633	Start Node: 12620	Start Offset: 0	☑ Exclude First Node
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Route: 0560171	Start Node: 12619	Start Offset: 0	☑ Exclude First Node
	End Node: 12624	End Offset: 0	☑ Exclude Last Node
Route: 0560780	Start Node: 12622	Start Offset: 0	☑ Exclude First Node
	End Node: 12623	End Offset: 0	☑ Exclude Last Node
Route: 0560369	Start Node: 12618	Start Offset: 0	☑ Exclude First Node
	End Node: 12621	End Offset: 0	☑ Exclude Last Node
Route: 0560076	Start Node: 18352	Start Offset: 0	☑ Exclude First Node
	End Node: 15476	End Offset: 0	☑ Exclude Last Node

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☑ 1320 Summary

REPORT DESCRIPTION

Portland
Brighton Ave., St. John St., Congress St. Area

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

Route: 0022X	Start Node: 19079	Start Offset: 0	☑ Exclude First Node
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Route: 0022X	Start Node: 16753	Start Offset: 0	☑ Exclude First Node
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Route: 3201042	Start Node: 16748	Start Offset: 0	☑ Exclude First Node
	End Node: 16765	End Offset: 0	☐ Exclude Last Node
Route: 0022S	Start Node: 16765	Start Offset: 0	☑ Exclude First Node
	End Node: 16770	End Offset: 0	☐ Exclude Last Node
Route: 0560637	Start Node: 16770	Start Offset: 0	☑ Exclude First Node
	End Node: 12700	End Offset: 0	☑ Exclude Last Node
Route: 3210295	Start Node: 12700	Start Offset: 0	☑ Exclude First Node
	End Node: 71539	End Offset: 0	☑ Exclude Last Node
Route: 0025X	Start Node: 12700	Start Offset: 0	☐ Exclude First Node
	End Node: 12928	End Offset: 0	☐ Exclude Last Node
Route: 0560001	Start Node: 16751	Start Offset: 0	☑ Exclude First Node
	End Node: 16764	End Offset: 0	☑ Exclude Last Node

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
16747	0001A - 9.88	Int of FORE RIVER PKY VALLEY ST W COMMERCIAL ST	9	26	0	0	3	4	19	26.9	10.520	0.82	1.12	0.00
											Statewide Crash Rate:	0.74		
66542	0001A - 9.72	Int of FORE RIVER PKY VETERANS BRIDGE	9	19	0	0	1	2	16	15.8	9.400	0.67	1.14	0.00
											Statewide Crash Rate:	0.74		
66546	0001A - 9.69	Int of FORE RIVER PKY RD INV 3209586	2	0	0	0	0	0	0	0.0	3.283	0.00	0.44	0.00
											Statewide Crash Rate:	0.16		
66548	001AS - 2.59	Int of FORE RIVER PKY RD INV 3209586	2	0	0	0	0	0	0	0.0	5.449	0.00	0.38	0.00
											Statewide Crash Rate:	0.16		
16753	3201019 - 0.82	Int of PARK AV VALLEY ST	2	10	0	0	1	4	5	50.0	4.639	0.72	0.40	1.80
											Statewide Crash Rate:	0.16		
16749	3201019 - 0.37	Int of D ST VALLEY ST	2	2	0	0	0	0	2	0.0	1.357	0.49	0.55	0.00
											Statewide Crash Rate:	0.16		
16751	3201019 - 0.60	Int of A ST VALLEY ST	2	5	0	0	0	2	3	40.0	1.467	1.14	0.54	2.11
											Statewide Crash Rate:	0.16		
16748	3201019 - 0.07	Int of DANFORTH ST ST JOHN ST VALLEY ST	9	11	0	0	1	2	8	27.3	3.995	0.92	1.34	0.00
											Statewide Crash Rate:	0.74		
16750	3201019 - 0.49	Int of C ST VALLEY ST	2	1	0	0	0	0	1	0.0	1.286	0.26	0.55	0.00
											Statewide Crash Rate:	0.16		
16752	3201019 - 0.66	Int of CONGRESS ST VALLEY ST	9	9	0	0	0	1	8	11.1	5.210	0.58	1.27	0.00
											Statewide Crash Rate:	0.74		
67750	3201019 - 0.05	Int of RD INV 3209812 VALLEY ST	2	0	0	0	0	0	0	0.0	2.723	0.00	0.46	0.00
											Statewide Crash Rate:	0.16		
67695	3201019 - 0.64	Non Int VALLEY ST	2	0	0	0	0	0	0	0.0	0.480	0.00	0.67	0.00
											Statewide Crash Rate:	0.16		
67749	0560191 - 1.34	Int of DANFORTH ST RD INV 3209812	2	0	0	0	0	0	0	0.0	2.670	0.00	0.44	0.00
											Statewide Crash Rate:	0.15		
18571	0560314 - 0.17	Int of CONGRESS ST GILMAN ST	2	20	0	0	0	6	14	30.0	5.274	1.26	0.39	3.26
											Statewide Crash Rate:	0.16		
19080	0560314 - 0.10	0509500 POR,GILMAN,'A' ST.	2	0	0	0	0	0	0	0.0	0.058	0.00	-0.42	0.00
											Statewide Crash Rate:	0.14		
19081	0560314 - 0	0509501 POR,GILMAN ST,END	2	0	0	0	0	0	0	0.0	0.019	0.00	-4.47	0.00
											Statewide Crash Rate:	0.14		
19079	0560314 - 0.31	Int of GILMAN ST PARK AV	2	1	0	0	1	0	0	100.0	3.841	0.09	0.42	0.00
											Statewide Crash Rate:	0.16		
16828	0560160 - 2.23	Int of CONGRESS ST FOREST ST	2	1	0	0	0	0	1	0.0	4.848	0.07	0.40	0.00
											Statewide Crash Rate:	0.16		
16827	0560160 - 2.13	Int of CONGRESS ST WEYMOUTH ST	2	3	0	0	0	1	2	33.3	4.615	0.22	0.40	0.00
											Statewide Crash Rate:	0.16		
16825	0560160 - 1.97	Int of BRAMHALL ST CONGRESS ST DEERING AV	9	17	0	1	1	4	11	35.3	7.276	0.78	1.19	0.00
											Statewide Crash Rate:	0.74		
16826	0560160 - 2.03	Int of CONGRESS ST ELLSWORTH ST	2	3	0	0	1	0	2	33.3	4.494	0.22	0.40	0.00
											Statewide Crash Rate:	0.16		
18352	0560077 - 0.01	Int of BRAMHALL PL BRAMHALL ST	2	0	0	0	0	0	0	0.0	2.944	0.00	0.41	0.00
											Statewide Crash Rate:	0.14		

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
12625	0560077 - 0.24	Int of BRAMHALL ST WESTERN PROMENADE	2	0	0	0	0	0	0	0.0	0.386	0.00	0.60	0.00
												Statewide Crash Rate:	0.14	
12603	0560077 - 0.13	0503015 POR,BRAMHALL,BRACKETT,CHADWICK	2	0	0	0	0	0	0	0.0	0.521	0.00	0.59	0.00
												Statewide Crash Rate:	0.14	
19111	0560077 - 0.11	0509531 POR,BRACKETT,BRAMHALL ST.	2	4	0	0	1	1	2	50.0	1.973	0.68	0.45	1.50
												Statewide Crash Rate:	0.14	
12621	0560077 - 0.06	0503033 POR,BRAMHALL,HILL ST.	2	1	0	0	0	0	1	0.0	1.575	0.21	0.48	0.00
												Statewide Crash Rate:	0.14	
12604	0560077 - 0.03	0503016 POR,BRAMHALL,VAUGHN ST.	2	1	0	0	0	0	1	0.0	3.051	0.11	0.40	0.00
												Statewide Crash Rate:	0.14	
60369	0560785 - 0.62	Non Int WESTERN PROMENADE	2	0	0	0	0	0	0	0.0	0.386	0.00	0.60	0.00
												Statewide Crash Rate:	0.14	
71553	0560782 - 0	Non Int WESTERN PROMENADE	2	0	0	0	0	0	0	0.0	0.214	0.00	0.56	0.00
												Statewide Crash Rate:	0.14	
12751	0560782 - 0.01	Int of WEST ST WESTERN PROMENADE	2	0	0	0	0	0	0	0.0	0.395	0.00	0.60	0.00
												Statewide Crash Rate:	0.14	
12602	0560782 - 0.07	Int of CHADWICK ST, WEST ST	2	0	0	0	0	0	0	0.0	1.295	0.00	0.50	0.00
												Statewide Crash Rate:	0.14	
12605	0560782 - 0.14	0503017 POR,VAUGHN,WEST ST.	2	0	0	0	0	0	0	0.0	1.753	0.00	0.47	0.00
												Statewide Crash Rate:	0.14	
19110	0560751 - 0.06	0509530 POR,BRACKETT,VAUGHN ST.	2	1	0	0	1	0	0	100.0	2.274	0.15	0.44	0.00
												Statewide Crash Rate:	0.14	
19112	0560071 - 0.82	0509532 POR,CHARLES,BRACKETT ST.	2	0	0	0	0	0	0	0.0	0.843	0.00	0.55	0.00
												Statewide Crash Rate:	0.14	
12617	0560128 - 0.03	0503029 POR,ELLSWORTH,CHARLES ST.	2	0	0	0	0	0	0	0.0	0.930	0.00	0.54	0.00
												Statewide Crash Rate:	0.14	
12624	0560128 - 0.09	0503036 POR,CHARLES,CRESCENT ST.	2	1	0	0	0	0	1	0.0	0.313	1.06	0.60	1.77
												Statewide Crash Rate:	0.14	
12622	0560251 - 0.03	0503034 POR,WESCOTT,ELLSWORTH ST.	2	0	0	0	0	0	0	0.0	0.542	0.00	0.59	0.00
												Statewide Crash Rate:	0.14	
12618	0560251 - 0.05	0503030 POR,ELLSWORTH,HILL ST.	2	1	0	0	0	0	1	0.0	0.871	0.38	0.54	0.00
												Statewide Crash Rate:	0.14	
15476	0560251 - 0.08	Int of BRAMHALL PL ELLSWORTH ST	2	0	0	0	0	0	0	0.0	0.525	0.00	0.59	0.00
												Statewide Crash Rate:	0.14	
12619	0560251 - 0.07	0503031 POR,CRESCENT,ELLSWORTH ST.	2	0	0	0	0	0	0	0.0	0.537	0.00	0.59	0.00
												Statewide Crash Rate:	0.14	
12623	0560171 - 0.05	0503035 POR,CRESCENT,WESCOTT ST.	2	0	0	0	0	0	0	0.0	0.096	0.00	0.20	0.00
												Statewide Crash Rate:	0.14	
12620	0560369 - 0.03	0503032 POR,HILL,RUSSELL ST.	2	1	0	0	0	0	1	0.0	0.242	1.38	0.58	2.37
												Statewide Crash Rate:	0.14	
16763	3201042 - 0.44	Int of C ST ST JOHN ST	2	3	0	0	1	0	2	33.3	2.590	0.39	0.47	0.00
												Statewide Crash Rate:	0.16	
16762	3201042 - 0.32	Int of D ST ST JOHN ST	2	0	0	0	0	0	0	0.0	2.480	0.00	0.47	0.00
												Statewide Crash Rate:	0.16	

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
16764	3201042 - 0.54	Int of A ST ST JOHN ST	2	8	0	0	0	1	7	12.5	3.383	0.79	0.43	1.82
												Statewide Crash Rate:	0.16	
16765	3201042 - 0.60	Int of CONGRESS ST ST JOHN ST	9	25	0	1	1	3	20	20.0	11.212	0.74	1.11	0.00
												Statewide Crash Rate:	0.74	
16770	0022S - 1.04	Int of PARK AV ST JOHN ST	9	36	0	0	2	4	30	16.7	5.948	2.02	1.24	1.63
												Statewide Crash Rate:	0.74	
66777	0022S - 1.02	Non Int ST JOHN ST	2	0	0	0	0	0	0	0.0	2.639	0.00	0.46	0.00
												Statewide Crash Rate:	0.16	
12629	0560637 - 0.15	Int of GRANITE ST ST JOHN ST	2	1	0	0	0	0	1	0.0	3.175	0.10	0.44	0.00
												Statewide Crash Rate:	0.16	
12692	0560637 - 0.53	Int of DARTMOUTH ST ST JOHN ST	2	1	0	0	0	0	1	0.0	2.890	0.12	0.45	0.00
												Statewide Crash Rate:	0.16	
12695	0560637 - 0.27	Int of FALMOUTH ST ST JOHN ST	2	1	0	0	0	0	1	0.0	3.223	0.10	0.44	0.00
												Statewide Crash Rate:	0.16	
12628	0560637 - 0.04	Int of ST JOHN ST WASHBURN AV	2	0	0	0	0	0	0	0.0	3.041	0.00	0.45	0.00
												Statewide Crash Rate:	0.16	
71539	0560637 - 0.56	Non Int ST JOHN ST	2	0	0	0	0	0	0	0.0	2.745	0.00	0.46	0.00
												Statewide Crash Rate:	0.16	
12878	0025X - 1.15	Int of BRIGHTON AV MASSACHUSETTS AV	2	1	0	0	0	0	1	0.0	6.452	0.05	0.33	0.00
												Statewide Crash Rate:	0.14	
A12883	0025X - 1.20	Int of BOLTON ST BRIGHTON AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
A12891	0025X - 1.30	Int of BRIGHTON AV FRANCES ST	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
P12776	0025X - 1.26	Int of BRIGHTON AV ORLAND ST	2	3	0	0	0	0	3	0.0	6.582	0.15	0.33	0.00
												Statewide Crash Rate:	0.14	
A12892	0025X - 1.35	Int of BRIGHTON AV EDWARDS ST	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
12877	0025X - 1.10	Int of BRIGHTON AV DOUGLASS ST	2	7	0	0	0	0	7	0.0	6.575	0.35	0.33	1.07
												Statewide Crash Rate:	0.14	
P12899	0025X - 1.47	Int of BRIGHTON AV, CALEB ST	2	3	0	0	0	1	2	33.3	6.064	0.16	0.34	0.00
												Statewide Crash Rate:	0.14	
12928	0025X - 1.63	Int of BRIGHTON AV STEVENS AV	9	54	0	0	2	9	43	20.4	8.793	2.05	1.15	1.78
												Statewide Crash Rate:	0.74	
12779	0025X - 1.12	Int of BRIGHTON AV, ST GEORGE ST	2	0	0	0	0	0	0	0.0	6.095	0.00	0.34	0.00
												Statewide Crash Rate:	0.14	
P12782	0025X - 1.18	Int of BEACON ST, BRIGHTON AV	2	4	0	0	2	0	2	50.0	6.796	0.20	0.33	0.00
												Statewide Crash Rate:	0.14	
A12884	0025X - 1.25	Int of BRIGHTON AV WHITNEY AV	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
A12904	0025X - 1.49	Int of BRIGHTON AV HOLLIS RD	2	0	0	0	0	0	0	0.0	0.000	0.00	0.00	0.00
												Statewide Crash Rate:	0.14	
P12775	0025X - 1.29	Int of BRIGHTON AV, DEBLOIS ST	2	1	0	0	0	0	1	0.0	6.090	0.05	0.34	0.00
												Statewide Crash Rate:	0.14	

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
P12783	0025X - 1.34	Int of BRIGHTON AV, HIGHLAND ST	2	6	0	0	0	1	5	16.7	6.056	0.33	0.34	0.00
											Statewide Crash Rate:	0.14		
12903	0025X - 1.53	Int of BRADLEY ST, BRIGHTON AV	2	3	0	0	0	2	1	66.7	5.930	0.17	0.34	0.00
											Statewide Crash Rate:	0.14		
12898	0025X - 1.41	0503311 POR,BRIGHTON AVE,CRAIGIE ST.	2	4	0	0	0	0	4	0.0	6.112	0.22	0.34	0.00
											Statewide Crash Rate:	0.14		
12700	0025X - 1.05	Int of BRIGHTON AV DEVONSHIRE ST NOYES ST ST JOH	9	21	0	1	0	7	13	38.1	7.464	0.94	1.19	0.00
											Statewide Crash Rate:	0.74		
Study Years:	3.00	NODE TOTALS:		320	0	3	19	55	243	24.1	226.905	0.47	0.39	1.21

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
66546	66542	3508657	0 - 0.03	0001A - 9.69	0.03	2	0	0	0	0	0	0	0.0	0.00064	0.00	828.15	0.00
Int of FORE RIVER PKY RD INV 3209586				US 1A											Statewide Crash Rate: 218.56		
66542	16747	3140171	0 - 0.16	0001A - 9.72	0.16	2	3	0	0	0	1	2	33.3	0.00782	127.84	445.86	0.00
Int of FORE RIVER PKY VETERANS BRIDGE				US 1A											Statewide Crash Rate: 218.56		
16747	66548	3117394	0 - 0.13	001AS - 2.46	0.13	2	4	0	0	0	1	3	25.0	0.00708	188.21	456.26	0.00
Int of FORE RIVER PKY VALLEY ST W COMMERCIAL ST				US 1AS											Statewide Crash Rate: 218.56		
66548	66542	3121654	0 - 0.04	001AS - 2.59	0.04	2	0	0	0	0	0	0	0.0	0.00187	0.00	637.86	0.00
Int of FORE RIVER PKY RD INV 3209586				US 1AS											Statewide Crash Rate: 218.56		
66548	66546	3120374	0 - 0.06	3209586 - 0	0.06	2	0	0	0	0	0	0	0.0	0.00046	0.00	880.08	0.00
Int of FORE RIVER PKY RD INV 3209586				RD INV 3209586											Statewide Crash Rate: 218.56		
16747	67750	3417945	0 - 0.05	3201019 - 0	0.05	2	0	0	0	0	0	0	0.0	0.00155	0.00	669.13	0.00
Int of FORE RIVER PKY VALLEY ST W COMMERCIAL ST				RD INV 3201019											Statewide Crash Rate: 218.56		
67750	16748	3417946	0 - 0.02	3201019 - 0.05	0.02	2	0	0	0	0	0	0	0.0	0.00047	0.00	878.84	0.00
Int of RD INV 3209812 VALLEY ST				RD INV 3201019											Statewide Crash Rate: 218.56		
16748	16749	3139464	0 - 0.30	3201019 - 0.07	0.30	2	2	0	0	1	0	1	50.0	0.00383	174.05	530.31	0.00
Int of DANFORTH ST ST JOHN ST VALLEY ST				RD INV 3201019											Statewide Crash Rate: 218.56		
16749	16750	3118971	0 - 0.12	3201019 - 0.37	0.12	2	4	0	0	0	0	2	0.0	0.00148	903.57	677.99	1.33
Int of D ST VALLEY ST				RD INV 3201019											Statewide Crash Rate: 218.56		
16750	16751	3117941	0 - 0.11	3201019 - 0.49	0.11	2	8	0	0	0	2	5	28.6	0.00133	2010.83	696.66	2.89
Int of C ST VALLEY ST				RD INV 3201019											Statewide Crash Rate: 218.56		
16751	67695	3416725	0 - 0.04	3201019 - 0.60	0.04	2	1	0	0	0	0	1	0.0	0.00038	868.76	906.67	0.00
Int of A ST VALLEY ST				RD INV 3201019											Statewide Crash Rate: 218.56		
67695	16752	3508600	0 - 0.02	3201019 - 0.64	0.02	2	0	0	0	0	0	0	0.0	0.00010	0.00	726.01	0.00
Non Int VALLEY ST				RD INV 3201019											Statewide Crash Rate: 218.56		
16752	16753	3118516	0 - 0.16	3201019 - 0.66	0.16	2	2	0	0	0	0	2	0.0	0.00134	496.76	694.56	0.00
Int of CONGRESS ST VALLEY ST				RD INV 3201019											Statewide Crash Rate: 218.56		
16752	67695	3416727	0 - 0.03	3209776 - 0	0.03	2	0	0	0	0	0	0	0.0	0.00014	0.00	893.23	0.00
Int of CONGRESS ST VALLEY ST				RD INV 3209776											Statewide Crash Rate: 218.56		
16748	67749	3417943	0 - 0.03	0560191 - 1.34	0.03	2	0	0	0	0	0	0	0.0	0.00062	0.00	696.56	0.00
Int of DANFORTH ST ST JOHN ST VALLEY ST				RD INV 05 60191											Statewide Crash Rate: 174.83		
67750	67749	3417947	0 - 0.02	3209812 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00008	0.00	316.22	0.00
Int of RD INV 3209812 VALLEY ST				RD INV 3209812											Statewide Crash Rate: 174.83		
19080	19081	194795	0 - 0.10	0560314 - 0	0.10	2	5	0	0	0	0	3	0.0	0.00004	43077.45	926.59	46.49
0509500 POR,GILMAN,'A' ST.				RD INV 05 60314											Statewide Crash Rate: 407.52		
18571	19080	194101	0 - 0.07	0560314 - 0.10	0.07	2	3	0	0	0	1	2	33.3	0.00002	49542.97	-1166.96	0.00
Int of CONGRESS ST GILMAN ST				RD INV 05 60314											Statewide Crash Rate: 407.52		
18571	19079	194100	0 - 0.14	0560314 - 0.17	0.14	2	4	0	0	0	0	1	0.0	0.00023	5889.98	1666.75	3.53
Int of CONGRESS ST GILMAN ST				RD INV 05 60314											Statewide Crash Rate: 407.52		

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
16751	19080	192420	0 - 0.03	0560001 - 0	0.03	2	0	0	0	0	0	0	0.0	0.00001	0.00	-3169.30	0.00
Int of A ST VALLEY ST				RD INV 05 60001											Statewide Crash Rate: 407.52		
16750	16763	192417	0 - 0.05	0560100 - 0	0.05	2	0	0	0	0	0	0	0.0	0.00007	0.00	1603.07	0.00
Int of C ST VALLEY ST				RD INV 05 60100											Statewide Crash Rate: 407.52		
16749	16762	192415	0 - 0.04	0560184 - 0	0.04	2	0	0	0	0	0	0	0.0	0.00008	0.00	1693.39	0.00
Int of D ST VALLEY ST				RD INV 05 60184											Statewide Crash Rate: 407.52		
16825	16826	3106408	0 - 0.06	0560160 - 1.97	0.06	2	6	0	1	0	1	3	40.0	0.00285	701.52	571.89	1.23
Int of BRAMHALL ST CONGRESS ST DEERING AV				RD INV 05 60160											Statewide Crash Rate: 218.56		
16826	16827	3106410	0 - 0.10	0560160 - 2.03	0.10	2	4	0	0	0	1	3	25.0	0.00424	314.80	517.06	0.00
Int of CONGRESS ST ELLSWORTH ST				RD INV 05 60160											Statewide Crash Rate: 218.56		
16827	16828	3120728	0 - 0.10	0560160 - 2.13	0.10	2	10	0	0	0	2	8	20.0	0.00453	735.77	508.44	1.45
Int of CONGRESS ST WEYMOUTH ST				RD INV 05 60160											Statewide Crash Rate: 218.56		
16828	18571	3106411	0 - 0.04	0560160 - 2.23	0.04	2	4	0	0	0	1	3	25.0	0.00207	645.26	621.60	1.04
Int of CONGRESS ST FOREST ST				RD INV 05 60160											Statewide Crash Rate: 218.56		
16752	18571	3106395	0 - 0.04	0560160 - 2.27	0.04	2	3	0	0	0	0	3	0.0	0.00201	497.12	625.94	0.00
Int of CONGRESS ST VALLEY ST				RD INV 05 60160											Statewide Crash Rate: 218.56		
16752	16765	3106394	0 - 0.05	0560160 - 2.31	0.05	2	1	0	0	0	0	1	0.0	0.00222	150.41	610.42	0.00
Int of CONGRESS ST VALLEY ST				RD INV 05 60160											Statewide Crash Rate: 218.56		
16825	18352	192521	0 - 0.01	0560077 - 0	0.01	2	2	0	0	0	0	1	0.0	0.00029	2267.52	1591.62	1.42
Int of BRAMHALL ST CONGRESS ST DEERING AV				RD INV 05 60077											Statewide Crash Rate: 407.52		
12604	18352	186995	0 - 0.02	0560077 - 0.01	0.02	2	0	0	0	0	0	0	0.0	0.00058	0.00	1368.39	0.00
0503016 POR,BRAMHALL,VAUGHN ST.				RD INV 05 60077											Statewide Crash Rate: 407.52		
12604	12621	186994	0 - 0.03	0560077 - 0.03	0.03	2	1	0	0	0	0	1	0.0	0.00047	706.95	1436.70	0.00
0503016 POR,BRAMHALL,VAUGHN ST.				RD INV 05 60077											Statewide Crash Rate: 407.52		
12621	19111	187026	0 - 0.05	0560077 - 0.06	0.05	2	2	0	0	0	0	1	0.0	0.00069	963.34	1307.97	0.00
0503033 POR,BRAMHALL,HILL ST.				RD INV 05 60077											Statewide Crash Rate: 407.52		
12603	19111	186993	0 - 0.02	0560077 - 0.11	0.02	2	0	0	0	0	0	0	0.0	0.00021	0.00	1687.34	0.00
0503015 POR,BRAMHALL,BRACKETT,CHADWICK				RD INV 05 60077											Statewide Crash Rate: 407.52		
12603	12625	186992	0 - 0.11	0560077 - 0.13	0.11	2	0	0	0	0	0	0	0.0	0.00042	0.00	1472.20	0.00
0503015 POR,BRAMHALL,BRACKETT,CHADWICK				RD INV 05 60077											Statewide Crash Rate: 407.52		
60369	12751	3097430	0 - 0.02	0560785 - 0.60	0.02	2	0	0	0	0	0	0	0.0	0.00003	0.00	680.37	0.00
Non Int WESTERN PROMENADE				RD INV 05 60785											Statewide Crash Rate: 407.52		
12625	60369	2074703	0 - 0.03	0560785 - 0.62	0.03	2	0	0	0	0	0	0	0.0	0.00012	0.00	1758.24	0.00
Int of BRAMHALL ST WESTERN PROMENADE				RD INV 05 60785											Statewide Crash Rate: 407.52		
71553	12751	4047594	0 - 0.01	0560782 - 0	0.01	2	0	0	0	0	0	0	0.0	0.00002	0.00	-892.86	0.00
Non Int WESTERN PROMENADE				RD INV 05 60782											Statewide Crash Rate: 407.52		

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
60369	71553	4047593	0 - 0.01	3200519 - 0	0.01	2	0	0	0	0	0	0	0.0	0.00002	0.00	-892.86	0.00
Non Int WESTERN PROMENADE				RD INV 3200519											Statewide Crash Rate: 407.52		
12602	12751	3097432	0 - 0.06	0560782 - 0.01	0.06	2	0	0	0	0	0	0	0.0	0.00020	0.00	1694.97	0.00
Int of CHADWICK ST, WEST ST				RD INV 05 60782											Statewide Crash Rate: 407.52		
12602	12605	186990	0 - 0.07	0560782 - 0.07	0.07	2	0	0	0	0	0	0	0.0	0.00052	0.00	1403.49	0.00
Int of CHADWICK ST, WEST ST				RD INV 05 60782											Statewide Crash Rate: 407.52		
12602	12603	186989	0 - 0.13	0560124 - 0.27	0.13	2	2	0	0	0	0	1	0.0	0.00091	733.68	1220.10	0.00
Int of CHADWICK ST, WEST ST				RD INV 05 60124											Statewide Crash Rate: 407.52		
12604	19110	186996	0 - 0.06	0560751 - 0	0.06	2	0	0	0	0	0	0	0.0	0.00099	0.00	1194.44	0.00
0503016 POR,BRAMHALL,VAUGHN ST.				RD INV 05 60751											Statewide Crash Rate: 407.52		
12605	19110	186999	0 - 0.13	0560751 - 0.06	0.13	2	3	0	0	0	0	3	0.0	0.00167	598.89	1042.44	0.00
0503017 POR,VAUGHN,WEST ST.				RD INV 05 60751											Statewide Crash Rate: 407.52		
19110	19111	194832	0 - 0.06	0560071 - 0.72	0.06	2	0	0	0	0	0	0	0.0	0.00040	0.00	1492.48	0.00
0509530 POR,BRACKETT,VAUGHN ST.				RD INV 05 60071											Statewide Crash Rate: 407.52		
19111	19112	194833	0 - 0.04	0560071 - 0.78	0.04	2	0	0	0	0	0	0	0.0	0.00034	0.00	1544.01	0.00
0509531 POR,BRACKETT,BRAMHALL ST.				RD INV 05 60071											Statewide Crash Rate: 407.52		
12617	19112	187018	0 - 0.03	0560128 - 0	0.03	2	0	0	0	0	0	0	0.0	0.00025	0.00	1640.21	0.00
0503029 POR,ELLSWORTH,CHARLES ST.				RD INV 05 60128											Statewide Crash Rate: 407.52		
12617	12624	187017	0 - 0.06	0560128 - 0.03	0.06	2	0	0	0	0	0	0	0.0	0.00034	0.00	1541.73	0.00
0503029 POR,ELLSWORTH,CHARLES ST.				RD INV 05 60128											Statewide Crash Rate: 407.52		
12617	12622	187016	0 - 0.03	0560251 - 0	0.03	2	0	0	0	0	0	0	0.0	0.00014	0.00	1756.21	0.00
0503029 POR,ELLSWORTH,CHARLES ST.				RD INV 05 60251											Statewide Crash Rate: 407.52		
12618	12622	187021	0 - 0.02	0560251 - 0.03	0.02	2	0	0	0	0	0	0	0.0	0.00010	0.00	1739.73	0.00
0503030 POR,ELLSWORTH,HILL ST.				RD INV 05 60251											Statewide Crash Rate: 407.52		
12618	12619	187019	0 - 0.02	0560251 - 0.05	0.02	2	0	0	0	0	0	0	0.0	0.00011	0.00	1752.80	0.00
0503030 POR,ELLSWORTH,HILL ST.				RD INV 05 60251											Statewide Crash Rate: 407.52		
12619	15476	187023	0 - 0.01	0560251 - 0.07	0.01	2	0	0	0	0	0	0	0.0	0.00004	0.00	1140.14	0.00
0503031 POR,CRESCENT,ELLSWORTH ST.				RD INV 05 60251											Statewide Crash Rate: 407.52		
15476	16826	191013	0 - 0.02	0560251 - 0.08	0.02	2	0	0	0	0	0	0	0.0	0.00010	0.00	1741.07	0.00
Int of BRAMHALL PL ELLSWORTH ST				RD INV 05 60251											Statewide Crash Rate: 407.52		
12620	19112	187025	0 - 0.05	0560633 - 0	0.05	2	1	0	0	0	0	1	0.0	0.00003	11783.77	160.62	73.37
0503032 POR,HILL,RUSSELL ST.				RD INV 05 60633											Statewide Crash Rate: 407.52		
12619	12623	187022	0 - 0.05	0560171 - 0	0.05	2	1	0	0	0	0	1	0.0	0.00005	6739.79	1306.79	5.16
0503031 POR,CRESCENT,ELLSWORTH ST.				RD INV 05 60171											Statewide Crash Rate: 407.52		
12623	12624	187028	0 - 0.04	0560171 - 0.05	0.04	2	0	0	0	0	0	0	0.0	0.00002	0.00	-939.97	0.00
0503035 POR,CRESCENT,WESCOTT ST.				RD INV 05 60171											Statewide Crash Rate: 407.52		
12622	12623	187027	0 - 0.05	0560780 - 0	0.05	2	0	0	0	0	0	0	0.0	0.00007	0.00	1609.51	0.00
0503034 POR,WESCOTT,ELLSWORTH ST.				RD INV 05 60780											Statewide Crash Rate: 407.52		
12618	12620	187020	0 - 0.03	0560369 - 0	0.03	2	1	0	0	0	0	1	0.0	0.00005	6302.57	1384.61	4.55
0503030 POR,ELLSWORTH,HILL ST.				RD INV 05 60369											Statewide Crash Rate: 407.52		

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
12620	12621	187024	0 - 0.02	0560369 - 0.03	0.02	2	0	0	0	0	0	0	0.0	0.00004	0.00	933.70	0.00
0503032 POR,HILL,RUSSELL ST.				RD INV 05 60369											Statewide Crash Rate: 407.52		
15476	18352	191014	0 - 0.06	0560076 - 0	0.06	2	0	0	0	0	0	0	0.0	0.00004	0.00	863.16	0.00
Int of BRAMHALL PL ELLSWORTH ST				RD INV 05 60076											Statewide Crash Rate: 407.52		
16753	19079	3122262	0 - 0.02	0022X - 0.53	0.02	2	1	0	0	0	0	1	0.0	0.00079	420.00	789.03	0.00
Int of PARK AV VALLEY ST				ST RTE 22											Statewide Crash Rate: 218.56		
16753	16770	4338968	0 - 0.02	0022X - 0.55	0.02	2	1	0	0	0	0	1	0.0	0.00073	458.87	804.91	0.00
Int of PARK AV VALLEY ST				ST RTE 22											Statewide Crash Rate: 218.56		
16753	16770	4338968	0.02 - 0.04	0022X - 0.57	0.02	2	0	0	0	0	0	0	0.0	0.00073	0.00	804.91	0.00
Int of PARK AV VALLEY ST				ST RTE 22											Statewide Crash Rate: 218.56		
16748	16762	3944344	0 - 0.06	3201042 - 0	0.06	2	2	0	0	1	0	1	50.0	0.00139	478.71	688.07	0.00
Int of DANFORTH ST ST JOHN ST VALLEY ST				RD INV 3201042											Statewide Crash Rate: 218.56		
16748	16762	3944344	0.06 - 0.32	3201042 - 0.06	0.26	2	2	0	0	1	0	1	50.0	0.00603	110.47	473.98	0.00
Int of DANFORTH ST ST JOHN ST VALLEY ST				RD INV 3201042											Statewide Crash Rate: 218.56		
16762	16763	3120382	0 - 0.12	3201042 - 0.32	0.12	2	5	0	0	0	0	4	0.0	0.00292	571.18	568.48	1.00
Int of D ST ST JOHN ST				RD INV 3201042											Statewide Crash Rate: 218.56		
16763	16764	3119255	0 - 0.10	3201042 - 0.44	0.10	2	4	0	0	0	0	4	0.0	0.00261	510.48	584.97	0.00
Int of C ST ST JOHN ST				RD INV 3201042											Statewide Crash Rate: 218.56		
16764	16765	3106397	0 - 0.06	3201042 - 0.54	0.06	2	0	0	0	0	0	0	0.0	0.00206	0.00	622.08	0.00
Int of A ST ST JOHN ST				RD INV 3201042											Statewide Crash Rate: 218.56		
16765	66777	3155094	0 - 0.14	0022S - 0.88	0.14	2	30	0	0	0	6	23	20.7	0.00739	1353.16	451.78	3.00
Int of CONGRESS ST ST JOHN ST				ST RTE 22S											Statewide Crash Rate: 218.56		
66777	16770	3154475	0 - 0.02	0022S - 1.02	0.02	2	0	0	0	0	0	0	0.0	0.00106	0.00	737.39	0.00
Non Int ST JOHN ST				ST RTE 22S											Statewide Crash Rate: 218.56		
12628	16770	3122179	0 - 0.04	0560637 - 0	0.04	2	0	0	0	0	0	0	0.0	0.00119	0.00	715.26	0.00
Int of ST JOHN ST WASHBURN AV				RD INV 05 60637											Statewide Crash Rate: 218.56		
12628	12629	3131531	0 - 0.11	0560637 - 0.04	0.11	2	3	0	0	0	1	2	33.3	0.00338	296.12	547.57	0.00
Int of ST JOHN ST WASHBURN AV				RD INV 05 60637											Statewide Crash Rate: 218.56		
12629	12695	3120379	0 - 0.12	0560637 - 0.15	0.12	2	3	0	0	1	0	2	33.3	0.00376	265.69	532.67	0.00
Int of GRANITE ST ST JOHN ST				RD INV 05 60637											Statewide Crash Rate: 218.56		
12692	12695	3129248	0 - 0.26	0560637 - 0.27	0.26	2	6	0	0	1	1	4	33.3	0.00751	266.16	450.03	0.00
Int of DARTMOUTH ST ST JOHN ST				RD INV 05 60637											Statewide Crash Rate: 218.56		
12692	71539	4047229	0 - 0.03	0560637 - 0.53	0.03	2	0	0	0	0	0	0	0.0	0.00079	0.00	790.98	0.00
Int of DARTMOUTH ST ST JOHN ST				RD INV 05 60637											Statewide Crash Rate: 218.56		
71539	12700	4047230	0 - 0.02	0560637 - 0.56	0.02	2	0	0	0	0	0	0	0.0	0.00024	0.00	943.59	0.00
Non Int ST JOHN ST				RD INV 05 60637											Statewide Crash Rate: 218.56		
12700	71539	4047231	0 - 0.02	3210295 - 0	0.02	2	0	0	0	0	0	0	0.0	0.00029	0.00	935.64	0.00
Int of BRIGHTON AV DEVONSHIRE ST NOYES ST ST JOHN ST				RD INV 3210295											Statewide Crash Rate: 218.56		
12700	12877	3944348	0 - 0.05	0025X - 1.05	0.05	2	8	1	0	0	2	5	37.5	0.00320	833.87	525.54	1.59
Int of BRIGHTON AV DEVONSHIRE ST NOYES				ST RTE 25											Statewide Crash Rate: 202.97		

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
ST ST JOHN ST																	
12779	12877	3120098	0 - 0.02	0025X - 1.10	0.02	2	1	0	0	0	1	0	100.0	0.00121	275.34	674.27	0.00
Int of BRIGHTON AV, ST GEORGE ST				ST RTE 25											Statewide Crash Rate: 202.97		
12779	12878	3129250	0 - 0.03	0025X - 1.12	0.03	2	2	0	0	0	0	2	0.0	0.00181	368.03	608.80	0.00
Int of BRIGHTON AV, ST GEORGE ST				ST RTE 25											Statewide Crash Rate: 202.97		
12782	12878	3131537	0 - 0.03	0025X - 1.15	0.03	2	3	0	0	0	2	1	66.7	0.00200	501.20	593.80	0.00
Int of BEACON ST, BRIGHTON AV				ST RTE 25											Statewide Crash Rate: 202.97		
12782	12883	3120099	0 - 0.02	0025X - 1.18	0.02	2	0	0	0	0	0	0	0.0	0.00129	0.00	663.59	0.00
Int of BEACON ST, BRIGHTON AV				ST RTE 25											Statewide Crash Rate: 202.97		
12883	12884	3123616	0 - 0.05	0025X - 1.20	0.05	2	0	0	0	0	0	0	0.0	0.00318	0.00	526.41	0.00
Int of BOLTON ST BRIGHTON AV				ST RTE 25											Statewide Crash Rate: 202.97		
12776	12884	3122184	0 - 0.01	0025X - 1.25	0.01	2	0	0	0	0	0	0	0.0	0.00064	0.00	779.59	0.00
Int of BRIGHTON AV ORLAND ST				ST RTE 25											Statewide Crash Rate: 202.97		
12775	12776	3106212	0 - 0.03	0025X - 1.26	0.03	2	2	0	0	0	1	1	50.0	0.00191	349.34	600.67	0.00
Int of BRIGHTON AV, DEBLOIS ST				ST RTE 25											Statewide Crash Rate: 202.97		
12775	12891	3123710	0 - 0.01	0025X - 1.29	0.01	2	0	0	0	0	0	0	0.0	0.00056	0.00	799.93	0.00
Int of BRIGHTON AV, DEBLOIS ST				ST RTE 25											Statewide Crash Rate: 202.97		
12783	12891	3123925	0 - 0.04	0025X - 1.30	0.04	2	1	0	0	0	1	0	100.0	0.00224	148.49	575.94	0.00
Int of BRIGHTON AV, HIGHLAND ST				ST RTE 25											Statewide Crash Rate: 202.97		
12783	12892	3131538	0 - 0.01	0025X - 1.34	0.01	2	0	0	0	0	0	0	0.0	0.00061	0.00	788.53	0.00
Int of BRIGHTON AV, HIGHLAND ST				ST RTE 25											Statewide Crash Rate: 202.97		
12892	12898	187491	0 - 0.06	0025X - 1.35	0.06	2	2	0	0	0	0	2	0.0	0.00362	183.97	508.96	0.00
Int of BRIGHTON AV EDWARDS ST				ST RTE 25											Statewide Crash Rate: 202.97		
12898	12899	187501	0 - 0.06	0025X - 1.41	0.06	2	4	0	0	0	1	3	25.0	0.00361	369.75	509.60	0.00
0503311 POR,BRIGHTON AVE,CRAIGIE ST.				ST RTE 25											Statewide Crash Rate: 202.97		
12899	12904	3131543	0 - 0.02	0025X - 1.47	0.02	2	1	0	0	0	1	0	100.0	0.00117	285.32	680.22	0.00
Int of BRIGHTON AV, CALEB ST				ST RTE 25											Statewide Crash Rate: 202.97		
12903	12904	3106229	0 - 0.04	0025X - 1.49	0.04	2	1	1	0	0	0	0	100.0	0.00233	142.84	570.17	0.00
Int of BRADLEY ST, BRIGHTON AV				ST RTE 25											Statewide Crash Rate: 202.97		
12903	12928	3131544	0 - 0.10	0025X - 1.53	0.10	2	1	0	0	0	0	1	0.0	0.00581	57.38	452.28	0.00
Int of BRADLEY ST, BRIGHTON AV				ST RTE 25											Statewide Crash Rate: 202.97		
16751	16764	192419	0 - 0.05	0560001 - 0.03	0.05	2	5	0	0	0	0	4	0.0	0.00036	4631.04	1527.03	3.03
Int of A ST VALLEY ST				RD INV 05 60001											Statewide Crash Rate: 407.52		
Study Years: 3.00				Section Totals:	5.54		165	2	1	5	27	115	21.2	0.13524	406.69	288.24	1.41
				Grand Totals:	5.54		485	2	4	24	82	358	23.1	0.13524	1195.42	406.85	2.94

COLLISION DIAGRAM

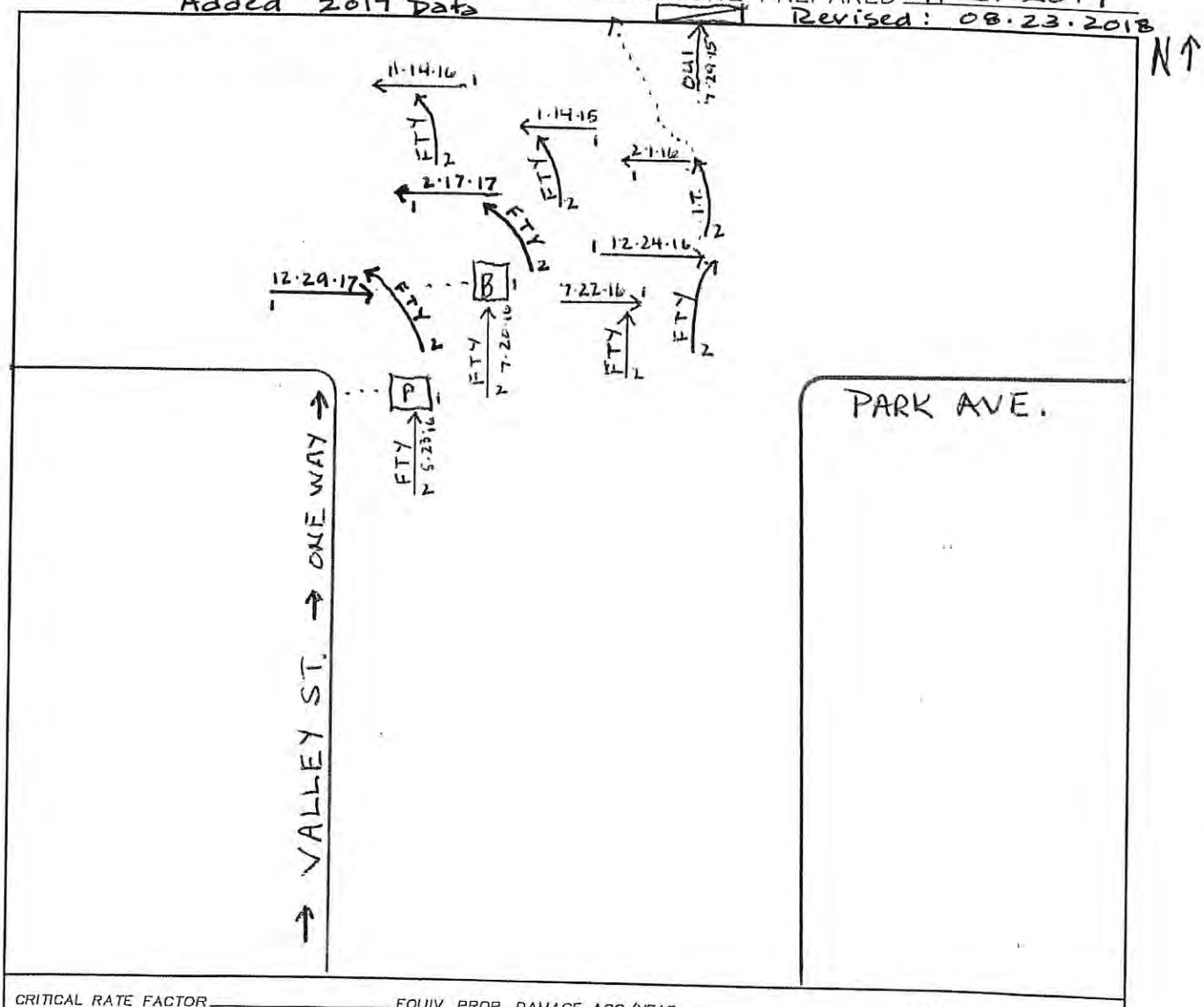
SHEET 1 OF 2

LOCATION Intersection of Park Avenue & Valley Street

TOWN Portland, Maine NODE NO(S) 16753

YEARS REVIEWED 2014 - 2016 DATE PREPARED 11.21.2017

Added 2017 Data Revised: 08.23.2018



CRITICAL RATE FACTOR _____ EQUIV. PROP. DAMAGE ACC/YEAR _____ ACC/MEV _____

LIGHT
1. DAWN (MORNING) 2. DAYLIGHT 3. DUSK (EVENING)
4. DARK (ST. LIGHTS ON) 5. DARK (NO ST. LIGHTS) 6. DARK (ST. LIGHTS OFF)
7. OTHER

ROAD SURFACE
1. DRY 2. WET 3. SNOW/SLUSH-SANDED
4. ICE/PACKED SNOW-SANDED 5. MUDDY 6. DEBRIS
7. OILY 8. SNOW/SLUSH-NOT SANDED 9. ICE-PKD. SNOW-NOT SANDED
10. OTHER

APPARENT CONTRIBUTING FACTORS - HUMAN
1. NO IMPROPER ACTION 2. FAIL TO YLD. RIGHT OF WAY 3. ILLEGAL UNSAFE SPEED
4. FOLLOW TOO CLOSE 5. DISREGARD TRAFFIC CONTROL DEVICE
6. DRIVING LEFT OF CENTER-NO PASSING 7. IMPROPER PASS-OVERTAKING
8. IMP. UNSAFE LANE CHANGE 9. IMP. PARKING START/STOP 10. IMPROPER TURN
11. UNSAFE BACKING 12. NO SIGNAL OR IMP. SIGNAL 13. IMPEDING TRAFFIC
14. DRIVER INATTENTION-DISTRACTION 15. DRIVER INEXPERIENCE
16. PEDEST. VIOLATION ERROR 17. PHYSICAL IMPAIRMENT 18. VISION OBSCURED-WINDSHIELD GLASS
19. VISION OBSCURED-SUN/HEADLIGHTS 20. OTHER VISION OBSCUREMENT
30. OTHER HUMAN VIOLATION FACTOR 31. HIT AND RUN 51. UNKNOWN

- VEHICULAR
41. DEFECTIVE BRAKES 42. DEFECTIVE TIRE/FAILURE 43. DEFECTIVE LIGHTS
44. DEFECTIVE SUSPENSION 45. DEFECTIVE STEERING 50. OTHER VEHICLE DEFECT
OR FACTOR 51. UNKNOWN

SYMBOLS

ANGLE	→	PEDESTRIAN	→ P	FATAL ACCIDENT	●
BACKING	→←	REAR END	→|		
FIXED OBJECT	→□	SIDE SWIPE	⇉	VEHICLE (MOVING)	→
HEAD ON	→|←	TURNING MOVE	↱	BICYCLE	- - - B
OVERTURN	→○	CHANGE LANE	⇉	ANIMAL	- - - A
PARKED VEHICLE	▨	OUT OF CONTROL	∿→	SLED	- - - S

WEATHER
C - CLEAR
SL - SLEET
F - FOG
S - SNOW
R - RAIN
CL - CLOUDY
XW - CROSS WINDS

INJURIES
K - FATAL
A - INCAPACITATING
B - NON-INCAPACITATING
C - POSSIBLE INJURY

COLLISION DIAGRAM

SHEET 2 OF 2

LOCATION Intersection of Park Avenue & Valley Street

TOWN Portland, Maine NODE NO(S) 16753

YEARS REVIEWED 2014 - 2016 DATE PREPARED 11.21.2017

Added 2017 Data Revised: 08.23.2018

REPORT NO.	DATE	TIME	INJURIES K	A	B	C	LIGHT	ROAD SURFACE	ACF	OTHER
15-0190	01.14.15	12:40					2	2	2	
15.2555	07.29.15	17:30					2	1	14/17	OWI
16.0371	02.01.16	14:50					2	1	10	
16.1541	05.23.16	22:02				1	5	1	2	
16.2240	07.20.16	17:24			1		2	1	2	
16.2272	07.22.16	13:48				1	2	1	2	
16.3509	11.14.16	12:20					2	1	2	
16.3941	12.24.16	11:10				1	2	2	2	
17.0600	02.17.17	09:14					2	1	2	
17.4129	12.29.17	13:09				1	2	1	2	

S:/SHEETS/COLLISION DIAGRAM.DWG

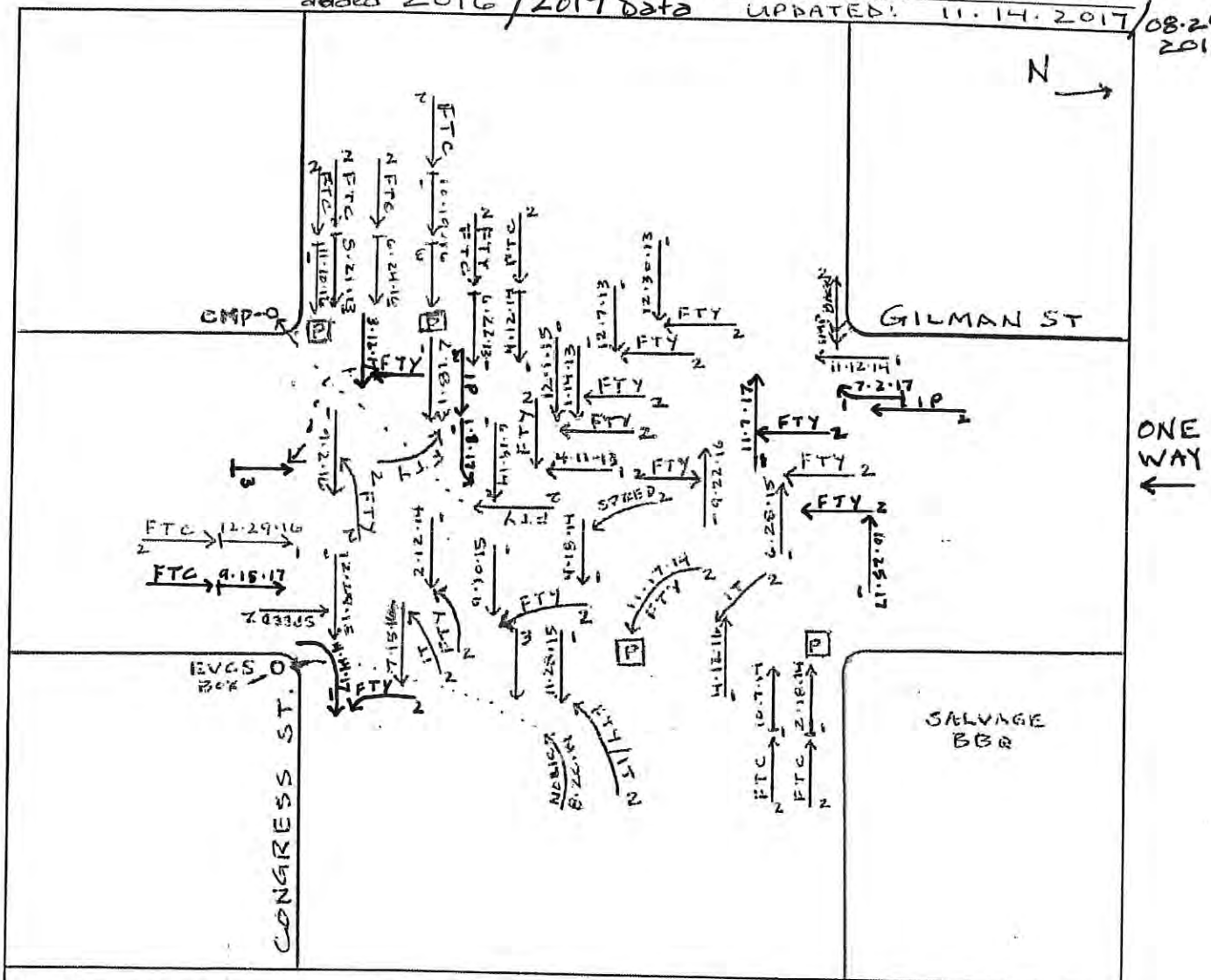
COLLISION DIAGRAM

SHEET 1 OF 2

LOCATION Intersection of Congress Street & Gilman Street

TOWN Portland, Maine NODE NO(S) 18571

YEARS REVIEWED 2013 - 2015 added 2016/2017 Data DATE PREPARED 10·24·2016 UPDATED: 11·14·2017/08·24·2018



CRITICAL RATE FACTOR _____ EQUIV. PROP. DAMAGE ACC/YEAR _____ ACC/MEV _____

LIGHT

1. DAWN (MORNING) 2. DAYLIGHT 3. DUSK (EVENING)
4. DARK (ST. LIGHTS ON) 5. DARK (NO ST. LIGHTS) 6. DARK (ST. LIGHTS OFF)
7. OTHER

ROAD SURFACE

1. DRY 2. WET 3. SNOW/SLUSH-SANDED
4. ICE/PACKED SNOW-SANDED 5. MUDDY 6. DEBRIS
7. OILY 8. SNOW/SLUSH-NOT SANDED 9. ICE-PKD. SNOW-NOT SANDED
10. OTHER

APPARENT CONTRIBUTING FACTORS - HUMAN

1. NO IMPROPER ACTION 2. FAIL TO YLD. RIGHT OF WAY 3. ILLEGAL UNSAFE SPEED
4. FOLLOW TOO CLOSE 5. DISREGARD TRAFFIC CONTROL DEVICE
6. DRIVING LEFT OF CENTER-NO PASSING 7. IMPROPER PASS-OVERTAKING
8. IMP. UNSAFE LANE CHANGE 9. IMP. PARKING START/STOP 10. IMPROPER TURN
11. UNSAFE BACKING 12. NO SIGNAL OR IMP. SIGNAL 13. IMPEDING TRAFFIC
14. DRIVER INATTENTION-DISTRACTION 15. DRIVER INEXPERIENCE
16. PEDEST. VIOLATION ERROR 17. PHYSICAL IMPAIRMENT 18. VISION OBSCURED-WINDSHIELD GLASS
19. VISION OBSCURED-SUN/HEADLIGHTS
20. OTHER VISION OBSCUREMENT 30. OTHER HUMAN VIOLATION FACTOR
31. HIT AND RUN 51. UNKNOWN

- VEHICULAR

41. DEFECTIVE BRAKES 42. DEFECTIVE TIRE/FAILURE 43. DEFECTIVE LIGHTS
44. DEFECTIVE SUSPENSION OR FACTOR 45. DEFECTIVE STEERING 50. OTHER VEHICLE DEFECT
51. UNKNOWN

SYMBOLS

ANGLE	PEDESTRIAN	FATAL ACCIDENT
BACKING	REAR END	
FIXED OBJECT	SIDE SWIPE	VEHICLE (MOVING)
HEAD ON	TURNING MOVE	BICYCLE
OVERTURN	CHANGE LANE	ANIMAL
PARKED VEHICLE	OUT OF CONTROL	SLED

WEATHER

C - CLEAR
SL - SLEET
F - FOG
S - SNOW
R - RAIN
CL - CLOUDY
XW - CROSS WINDS

INJURIES

K - FATAL
A - INCAPACITATING
B - NON-INCAPACITATING
C - POSSIBLE INJURY

COLLISION DIAGRAM

SHEET 2 OF 2

LOCATION Intersection of Congress Street & Gilman Street

TOWN Portland, Maine NODE NO(S) 18571

YEARS REVIEWED 2013 - 2015 DATE PREPARED 10.24.2016
added 2016/2017 DATA UPDATED: 11.14.2017 / 08.24.2018

REPORT NO.	DATE	TIME	INJURIES K	A	B	C	LIGHT	ROAD SURFACE	ACF	OTHER
13.169	01.14.13	16:15					2	1	2	
13.609	02.18.13	21:00				1	4	1	2	
13.1153	04.11.13	12:40					2	1	2	
13.1780	06.22.13	12:13				1	2	1	2/4	
13.2344	08.21.13	14:08					2	1	4	
13.3531	12.07.13	10:11				1	2	2	2/19	SMV
13.3827	12.30.13	11:43					2	2	2	
14.538	02.12.14	14:50					2	1	2	
14.631	02.18.14	12:10					2	1	4	Pedestrian
14.1194	04.12.14	12:30					2	1	4/14	
14.1243	04.18.14	11:10					2	1	3	
14.1789	06.19.14	23:45					4	1	2	
14.2519	08.26.14	14:54					2	1	15/30	NO LICENSE NO INSURANCE
14.2955	10.07.14	13:14					2	1	4	
14.3344	11.12.14	18:49					4	1	11	
14.3389	11.17.14	17:15				1	5	2	2	Pedestrian
15.2214	06.28.15	13:00					2	2	2	
15.3054	09.10.15	20:16					4	1	2	
15.3961	11.28.15	12:30					2	1	2/10	
15.3994	12.01.15	16:00					2	2	2	
15.4357	12.29.15	15:00					2	3	3	
16.1134	04.12.16	14:24					2	2	10	
16.1930	06.24.16	18:38					2	1	4	
16.2178	07.15.16	12:20					2	1	10	
16.2693	09.02.16	08:43					2	1	2	No License
16.2932	09.22.16	12:59				1	2	1	2	
16.3228	10.19.16	10:51				1	2	1	4	
16.3480	11.10.16	11:35				1	2	1	4	
16.3991	12.29.16	16:41					4	3	4	
17.0081	01.08.17	17:32					4	2	12	
17.0882	03.12.17	12:00				2	2	1	2	
17.1262	04.14.17	10:30					2	1	2	
17.2092	07.02.17	18:00					2	1	12	
17.2941	09.15.17	11:15				1	2	1	4	
17.3359	10.25.17	04:42					4	2	2	
17.3493	11.07.17	08:12				1	2	1	2	

S:/SHEETS/COLLISION DIAGRAM.DWG

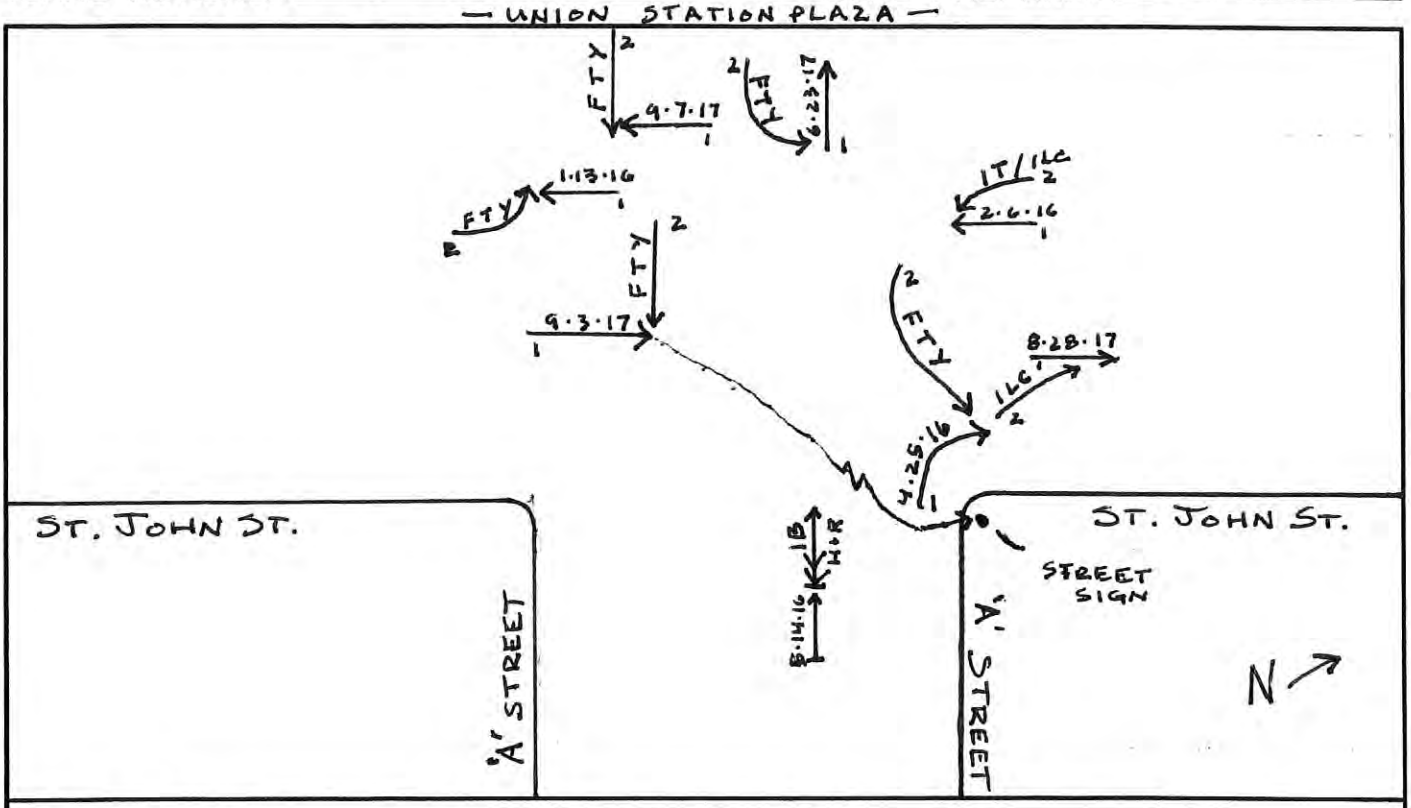
COLLISION DIAGRAM

SHEET 1 OF 1

LOCATION St. John Street / 'A' Street

TOWN Portland, Maine NODE NO(S) 16764

YEARS REVIEWED 2015 to 2017 DATE PREPARED 08·24·2018



CRITICAL RATE FACTOR _____ EQUIV. PROP. DAMAGE ACC/YEAR _____ ACC/MEV _____

LIGHT
1. DAWN (MORNING) 2. DAYLIGHT 3. DUSK (EVENING)
4. DARK (ST. LIGHTS ON) 5. DARK (NO ST. LIGHTS) 6. DARK (ST. LIGHTS OFF)
7. OTHER

ROAD SURFACE
1. DRY 2. WET 3. SNOW/SLUSH-SANDED
4. ICE/PACKED SNOW-SANDED 5. MUDDY 6. DEBRIS
7. OILY 8. SNOW/SLUSH-NOT SANDED 9. ICE-PKD. SNOW-NOT SANDED
10. OTHER

APPARENT CONTRIBUTING FACTORS – HUMAN
1. NO IMPROPER ACTION 2. FAIL TO YLD. RIGHT OF WAY 3. ILLEGAL UNSAFE SPEED
4. FOLLOW TOO CLOSE 5. DISREGARD TRAFFIC CONTROL DEVICE
6. DRIVING LEFT OF CENTER-NO PASSING 7. IMPROPER PASS-OVERTAKING
8. IMP. UNSAFE LANE CHANGE 9. IMP. PARKING START/STOP 10. IMPROPER TURN
11. UNSAFE BACKING 12. NO SIGNAL OR IMP. SIGNAL 13. IMPEDING TRAFFIC
14. DRIVER INATTENTION-DISTRACTION 15. DRIVER INEXPERIENCE
16. PEDEST. VIOLATION ERROR 17. PHYSICAL IMPAIRMENT 18. VISION OBSCURED-WINDSHIELD GLASS
19. VISION OBSCURED-SUN/HEADLIGHTS
20. OTHER VISION OBSCUREMENT 30. OTHER HUMAN VIOLATION FACTOR
31. HIT AND RUN 51. UNKNOWN

– VEHICULAR
41. DEFECTIVE BRAKES 42. DEFECTIVE TIRE/FAILURE 43. DEFECTIVE LIGHTS
44. DEFECTIVE SUSPENSION OR FACTOR 45. DEFECTIVE STEERING 50. OTHER VEHICLE DEFECT
51. UNKNOWN

SYMBOLS

ANGLE	PEDESTRIAN [P]	FATAL ACCIDENT
BACKING	REAR END	
FIXED OBJECT	SIDE SWIPE	VEHICLE (MOVING)
HEAD ON	TURNING MOVE	BICYCLE [B]
OVERTURN	CHANGE LANE	ANIMAL [A]
PARKED VEHICLE	OUT OF CONTROL	SLED [S]

WEATHER
C = CLEAR F = FOG R = RAIN
SL = SLEET S = SNOW CL = CLOUDY
XW = CROSS WINDS

INJURIES
K = FATAL B = NON-INCAPACITATING
A = INCAPACITATING C = POSSIBLE INJURY

REPORT NO.	DATE	TIME	INJURIES K	A	B	C	LIGHT	ROAD SURFACE	ACF	OTHER
16·0134	01·13·16	07:06					2	3	2/14	
16·0455	02·06·16	16:24					2	2	8/10	
16·1232	04·25·16	17:06					2	1	2	
16·1433	05·14·16	12:25					2	1	11/31	
17·2019	06·23·17	12:06					2	1	2/14	
17·2741	08·28·17	14:26					2	1	8	
17·2808	09·03·17	18:24				3	3	2	2/3	
17·2844	09·07·17	17:58					2	1	2	

S:/SHEETS/COLLISION DIAGRAM.DWG

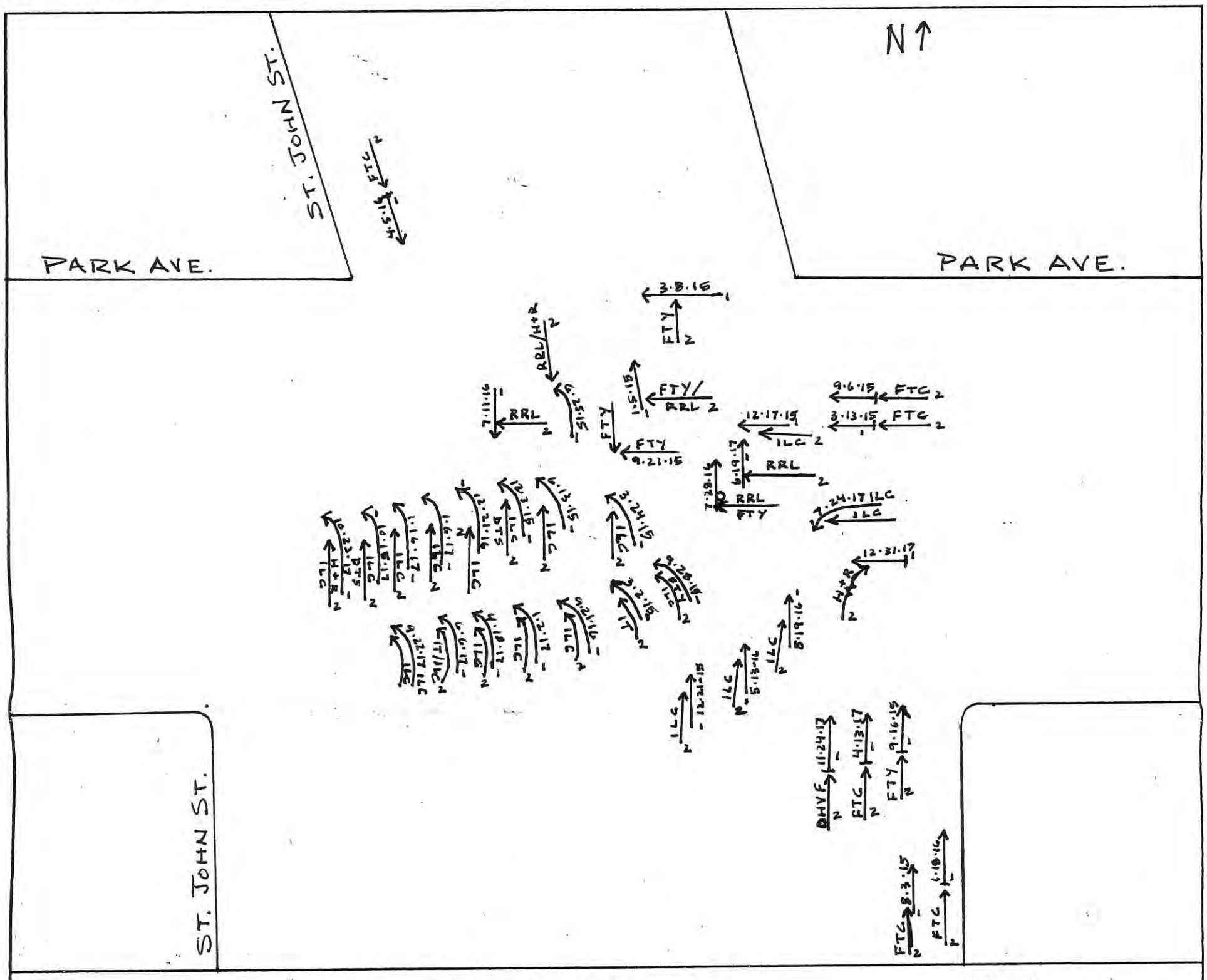
COLLISION DIAGRAM

SHEET 1 OF 2

LOCATION Park Avenue / St. John Street

TOWN Portland, Maine NODE NO(S) 16770

YEARS REVIEWED 2015 to 2017 DATE PREPARED 08.22.2018



CRITICAL RATE FACTOR EQUIV. PROP. DAMAGE ACC/YEAR ACC/MEV

LIGHT
1. DAWN (MORNING) 2. DAYLIGHT 3. DUSK (EVENING)
4. DARK (ST. LIGHTS ON) 5. DARK (NO ST. LIGHTS) 6. DARK (ST. LIGHTS OFF)
7. OTHER

ROAD SURFACE
1. DRY 2. WET 3. SNOW/SLUSH–SANDED
4. ICE/PACKED SNOW–SANDED 5. MUDDY 6. DEBRIS
7. OILY 8. SNOW/SLUSH–NOT SANDED 9. ICE–PKD. SNOW–NOT SANDED
10. OTHER

APPARENT CONTRIBUTING FACTORS – HUMAN
1. NO IMPROPER ACTION 2. FAIL TO YLD. RIGHT OF WAY 3. ILLEGAL UNSAFE SPEED
4. FOLLOW TOO CLOSE 5. DISREGARD TRAFFIC CONTROL DEVICE
6. DRIVING LEFT OF CENTER–NO PASSING 7. IMPROPER PASS–OVERTAKING
8. IMP. UNSAFE LANE CHANGE 9. IMP. PARKING START/STOP 10. IMPROPER TURN
11. UNSAFE BACKING 12. NO SIGNAL OR IMP. SIGNAL 13. IMPEDING TRAFFIC
14. DRIVER INATTENTION–DISTRACTION 15. DRIVER INEXPERIENCE
16. PEDEST. VIOLATION ERROR 17. PHYSICAL IMPAIRMENT 18. VISION OBSCURED–WINDSHIELD GLASS
19. VISION OBSCURED–SUN/HEADLIGHTS
20. OTHER VISION OBSCUREMENT 30. OTHER HUMAN VIOLATION FACTOR
31. HIT AND RUN 51. UNKNOWN

– VEHICULAR
41. DEFECTIVE BRAKES 42. DEFECTIVE TIRE/FAILURE 43. DEFECTIVE LIGHTS
44. DEFECTIVE SUSPENSION OR FACTOR 45. DEFECTIVE STEERING 50. OTHER VEHICLE DEFECT
51. UNKNOWN

SYMBOLS

ANGLE		PEDESTRIAN	P	FATAL ACCIDENT	
BACKING		REAR END			
FIXED OBJECT		SIDE SWIPE		VEHICLE (MOVING)	
HEAD ON		TURNING MOVE		BICYCLE	B
OVERTURN		CHANGE LANE		ANIMAL	A
PARKED VEHICLE		OUT OF CONTROL		SLED	S

WEATHER
C – CLEAR F – FOG R – RAIN
SL – SLEET S – SNOW CL – CLOUDY
XW – CROSS WINDS

INJURIES
K – FATAL B – NON–INCAPACITATING
A – INCAPACITATING C – POSSIBLE INJURY

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COLLISION DIAGRAM

LOCATION Park Avenue / St. John Street

TOWN Portland, Maine NODE NO(S) 16770

YEARS REVIEWED 2015 to 2017 DATE PREPARED 08·22·2018

REPORT NO.	DATE	TIME	INJURIES K	A	B	C	LIGHT	ROAD SURFACE	ACF	OTHER
15·0051	01·05·15	15:28			3		2	3	2/5	
15·1037	03·02·15	20:45					4	1	10	
15·1106	03·08·15	11:39				2	2	1	2/5	
15·1164	03·13·15	13:58				2	2	1	2/4	
15·1273	03·24·15	15:30					2	1	8	
15·2027	06·13·15	16:42					2	1	8/10	
15·2184	06·25·15	18:55					2	1	31	
15·2605	08·03·15	17:20					2	1	4	
15·3014	09·26·15	14:31					2	1	4/14	
15·3110	09·16·15	14:28				1	2	1	2/14	
15·3164	09·21·15	05:36					1	1	2	
15·3253	09·28·15	10:29					2	1	8/10	
15·4031	12·03·15	17:09					4	2	5	
15·4211	12·17·15	14:58					2	2	8	
15·4278	12·21·15	20:35					4	1	8	
16·0208	01·18·16	15:00					2	3	3/4	
16·1078	04·05·16	15:42					2	1	4	
16·1420	05·13·16	13:17					2	1	8	
16·1502	05·19·16	17:32					2	1	8	
16·2107	07·11·16	13:10					2	1	5	
16·2341	07·28·16	20:06				2	3	1	2/5/14	
16·2921	09·21·16	16:33					2	1	8	
16·3906	12·21·16	12:47					2	1	8	
17·0012	01·02·17	20:30					4	1	8	
17·0060	01·06·17	16:37					4	1	8	
17·0158	01·16·17	16:56					4	1	8	
17·1251	04·13·17	13:08					2	1	4	
17·1302	04·18·17	19:06					4	1	8	
17·1827	06·06·17	12:46					2	2	10	
17·1966	06·19·17	15:37					2	1	5	
17·2353	07·24·17	13:10					2	2	5	
17·3010	09·22·17	16:25					2	1	8	
17·3241	10·15·17	14:25					2	1	5	
17·3340	10·23·17	13:13					2	1	8/31	
17·3674	11·24·17	23:27			1	1	4	1	30	
17·4166	12·31·17	20:40					4	1	3/10/31	

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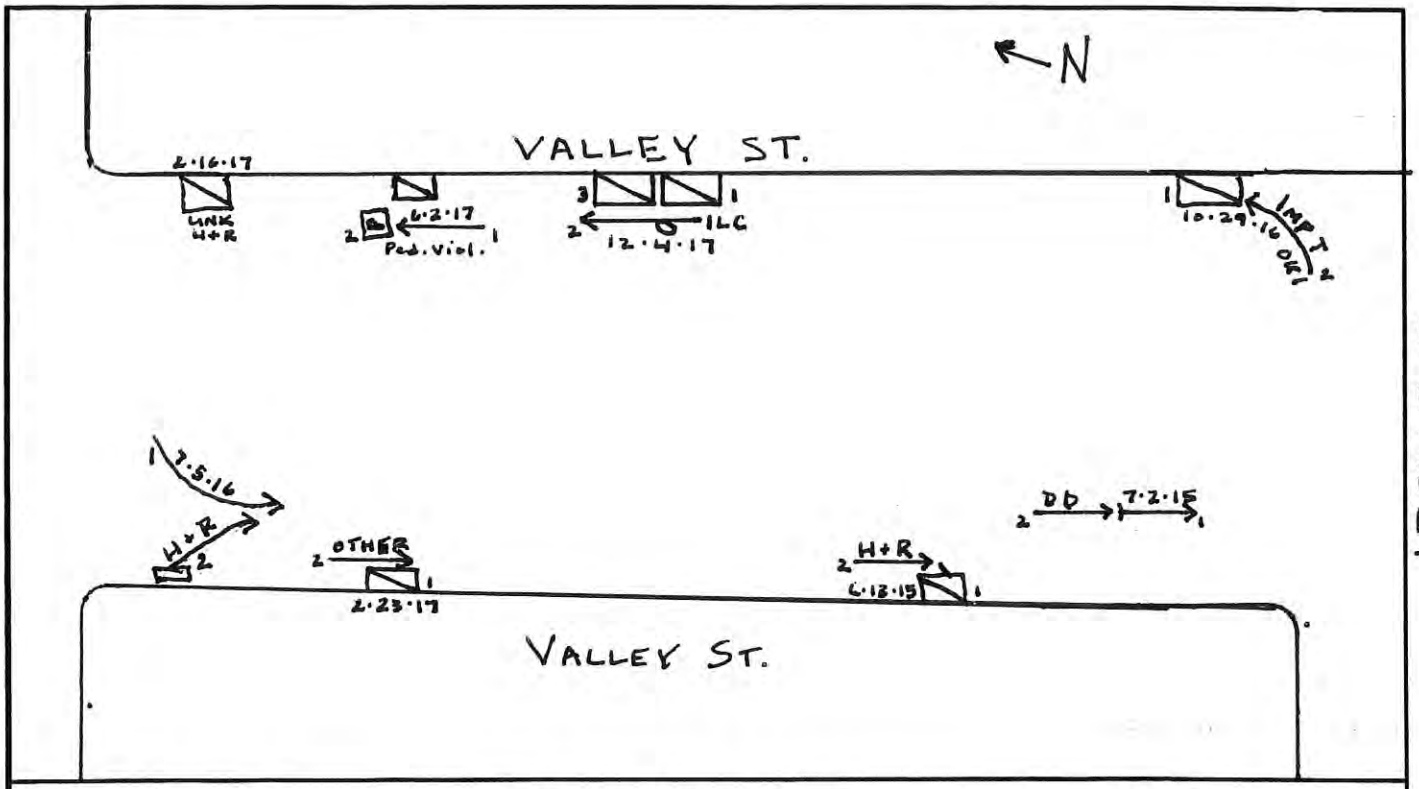
COLLISION DIAGRAM

SHEET 1 OF 1

LOCATION Valley St. from 'A' Street to 'C' Street

TOWN Portland, Maine NODE NO(S) 16750 to 16751

YEARS REVIEWED 2015 to 2017 DATE PREPARED 08.24.2018



CRITICAL RATE FACTOR _____ EQUIV. PROP. DAMAGE ACC/YEAR _____ ACC/MEV _____

LIGHT
1. DAWN (MORNING) 2. DAYLIGHT 3. DUSK (EVENING)
4. DARK (ST. LIGHTS ON) 5. DARK (NO ST. LIGHTS) 6. DARK (ST. LIGHTS OFF)
7. OTHER

ROAD SURFACE
1. DRY 2. WET 3. SNOW/SLUSH-SANDED
4. ICE/PACKED SNOW-SANDED 5. MUDDY 6. DEBRIS
7. OILY 8. SNOW/SLUSH-NOT SANDED 9. ICE-PKD. SNOW-NOT SANDED
10. OTHER

APPARENT CONTRIBUTING FACTORS - HUMAN
1. NO IMPROPER ACTION 2. FAIL TO YLD. RIGHT OF WAY 3. ILLEGAL UNSAFE SPEED
4. FOLLOW TOO CLOSE 5. DISREGARD TRAFFIC CONTROL DEVICE
6. DRIVING LEFT OF CENTER-NO PASSING 7. IMPROPER PASS-OVERTAKING
8. IMP. UNSAFE LANE CHANGE 9. IMP. PARKING START/STOP 10. IMPROPER TURN
11. UNSAFE BACKING 12. NO SIGNAL OR IMP. SIGNAL 13. IMPEDING TRAFFIC
14. DRIVER INATTENTION-DISTRACTION 15. DRIVER INEXPERIENCE
16. PEDEST. VIOLATION ERROR 17. PHYSICAL IMPAIRMENT 18. VISION OBSCURED-WINDSHIELD GLASS
19. VISION OBSCURED-SUN/HEADLIGHTS
20. OTHER VISION OBSCUREMENT 30. OTHER HUMAN VIOLATION FACTOR
31. HIT AND RUN 51. UNKNOWN

- VEHICULAR
41. DEFECTIVE BRAKES 42. DEFECTIVE TIRE/FAILURE 43. DEFECTIVE LIGHTS
44. DEFECTIVE SUSPENSION OR FACTOR 45. DEFECTIVE STEERING 50. OTHER VEHICLE DEFECT
51. UNKNOWN

SYMBOLS

ANGLE		PEDESTRIAN	P	FATAL ACCIDENT	●
BACKING		REAR END			
FIXED OBJECT	□	SIDE SWIPE		VEHICLE (MOVING)	
HEAD ON		TURNING MOVE		BICYCLE	B
OVERTURN		CHANGE LANE		ANIMAL	A
PARKED VEHICLE		OUT OF CONTROL		SLED	S

WEATHER
C = CLEAR F = FOG R = RAIN
SL = SLEET S = SNOW CL = CLOUDY
XW = CROSS WINDS

INJURIES
K = FATAL B = NON-INCAPACITATING
A = INCAPACITATING C = POSSIBLE INJURY

REPORT NO.	DATE	TIME	INJURIES K	A	B	C	LIGHT	ROAD SURFACE	ACF	OTHER
15.2037	06.13.15	21:30				1	4	1	31	
15.2268	07.02.15	08:00					2	1	14	
16.2031	07.05.16	07:14					2	1	31	
16.3334	10.29.16	01:17					4	1	10/17	
17.0609	02.16.17	20:00					4	1	31	
17.0710	02.23.17	17:20					2	1	30	
17.1786	06.02.17	06:55					2	1	16	Pedestrian
17.3754	12.04.17	08:36					2	1	8/14	

S:/SHEETS/COLLISION DIAGRAM.DWG

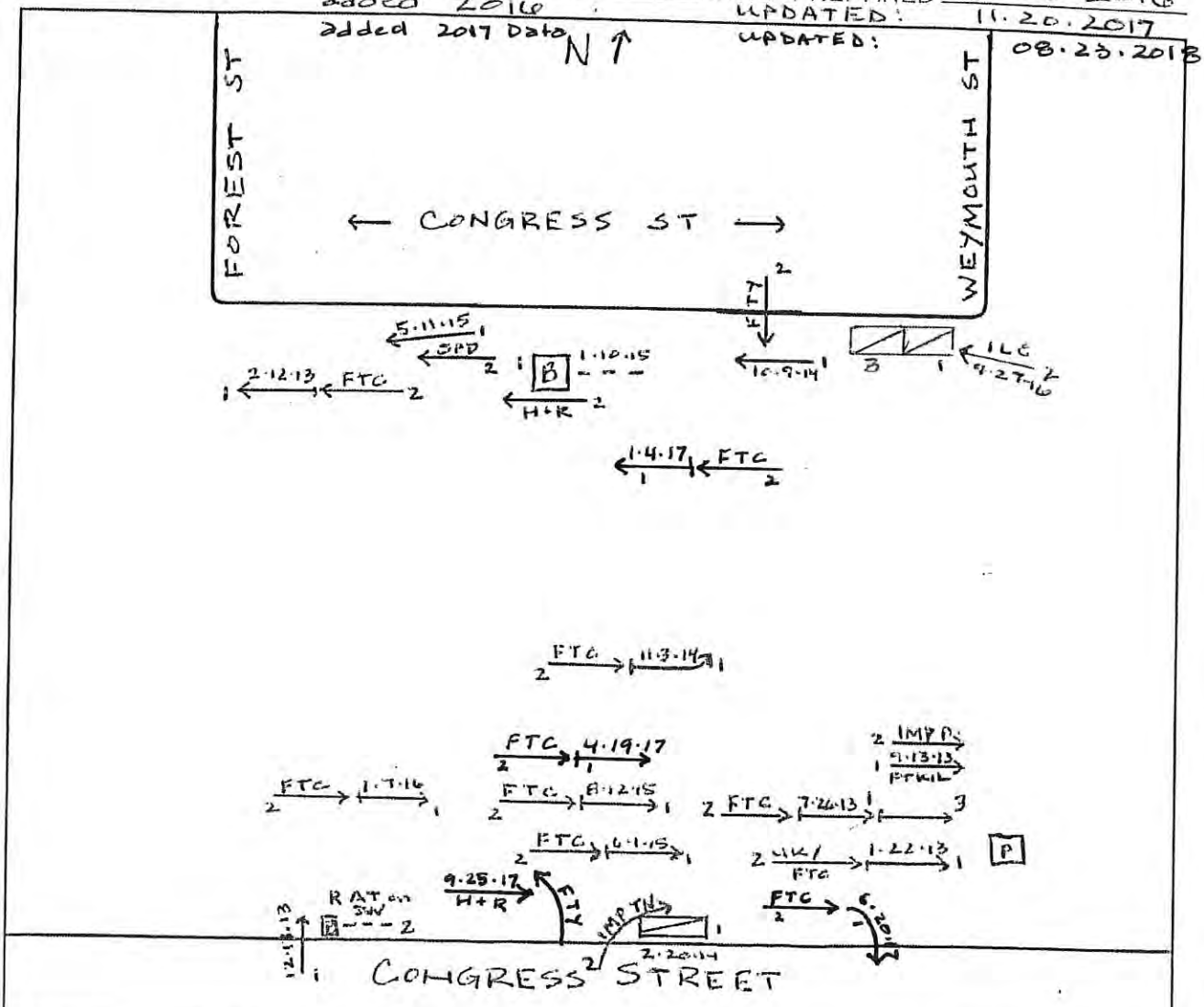
COLLISION DIAGRAM

SHEET 1 OF 2

LOCATION Congress Street - Forest to Weymouth Street

TOWN Portland, Maine — NODE NO(S) 16827 to 16828

YEARS REVIEWED 2013 - 2015 added 2016 added 2017 Data — DATE PREPARED 10.25.2016 UPDATED: 11.20.2017 UPDATED: 08.23.2018



CRITICAL RATE FACTOR _____ EQUIV. PROP. DAMAGE ACC/YEAR _____ ACC/MEV _____

LIGHT
1. DAWN (MORNING) 2. DAYLIGHT 3. DUSK (EVENING)
4. DARK (ST. LIGHTS ON) 5. DARK (NO ST. LIGHTS) 6. DARK (ST. LIGHTS OFF)
7. OTHER

ROAD SURFACE
1. DRY 2. WET 3. SNOW/SLUSH-SANDED
4. ICE/PACKED SNOW-SANDED 5. MUDDY 6. DEBRIS
7. OILY 8. SNOW/SLUSH-NOT SANDED 9. ICE-PKD. SNOW-NOT SANDED
10. OTHER

APPARENT CONTRIBUTING FACTORS - HUMAN
1. NO IMPROPER ACTION 2. FAIL TO YLD. RIGHT OF WAY 3. ILLEGAL UNSAFE SPEED
4. FOLLOW TOO CLOSE 5. DISREGARD TRAFFIC CONTROL DEVICE
6. DRIVING LEFT OF CENTER-NO PASSING 7. IMPROPER PASS-OVERTAKING
8. IMP. UNSAFE LANE CHANGE 9. IMP. PARKING START/STOP 10. IMPROPER TURN
11. UNSAFE BACKING 12. NO SIGNAL OR IMP. SIGNAL 13. IMPEDING TRAFFIC
14. DRIVER INATTENTION-DISTRACTION 15. DRIVER INEXPERIENCE
16. PEDEST. VIOLATION ERROR 17. PHYSICAL IMPAIRMENT 18. VISION OBSCURED-WINDSHIELD GLASS
19. VISION OBSCURED-SUN/HEADLIGHTS
20. OTHER VISION OBSCUREMENT 30. OTHER HUMAN VIOLATION FACTOR
31. HIT AND RUN 51. UNKNOWN

- VEHICULAR
41. DEFECTIVE BRAKES 42. DEFECTIVE TIRE/FAILURE 43. DEFECTIVE LIGHTS
44. DEFECTIVE SUSPENSION 45. DEFECTIVE STEERING 50. OTHER VEHICLE DEFECT
OR FACTOR 51. UNKNOWN

SYMBOLS
ANGLE, BACKING, FIXED OBJECT, HEAD ON, OVERTURN, PARKED VEHICLE, PEDESTRIAN, REAR END, SIDE SWIPE, TURNING MOVE, CHANGE LANE, OUT OF CONTROL, FATAL ACCIDENT, VEHICLE (MOVING), BICYCLE (B), ANIMAL (A), SLED (S)

WEATHER
C - CLEAR
SL - SLEET
F - FOG
S - SNOW
R - RAIN
CL - CLOUDY
XW - CROSS WINDS

INJURIES
K - FATAL
A - INCAPACITATING
B - NON-INCAPACITATING
C - POSSIBLE INJURY

COLLISION DIAGRAM

SHEET 2 OF 2

LOCATION Congress Street - Forest to Weymouth Street

TOWN Portland, Maine NODE NO(S) 16827 to 16828

YEARS REVIEWED 2013 - 2015 DATE PREPARED 10.25.2016

added 2017 Data added 2016 UPDATED: 11.20.2017 / 08.23.2018

REPORT NO.	DATE	TIME	INJURIES K	A	B	C	LIGHT	ROAD SURFACE	ACF	OTHER
13.272	01.22.13	11:55					2	1	51	Pedestrian
13.525	02.12.13	11:50					2	1	4	
13.2108	07.26.13	15:35				1	2	1	4	
13.2604	09.13.13	22:03					4	2	7/8	
13.3610	12.13.13	13:33					2	1	16	Bicyclist
14.710	02.20.14	16:15					2	2	10	
14.2975	10.09.14	13:43					2	1	2	
14.3295	11.03.14	14:38					2	2	4	
15.125	01.10.15	20:40				1	4	3	31	Hit + Run Bicyclist
15.1725	05.11.15	16:35					2	1	3	
15.1925	06.01.15	14:55					2	2	4	
15.2704	08.12.15	15:02					2	1	4	
16.0071	01.07.16	16:28					4	1	4	
16.2980	09.27.16	10:36					2	1	8	
17.0029	01.04.17	13:50					2	1	4	
17.1307	04.19.17	08:01					2	1	4	
17.1971	06.20.17	08:00					2	1	4	
17.3033	09.25.17	20:20					4	1	2	

S:/SHEETS/COLLISION DIAGRAM.DWG

COLLISION DIAGRAM

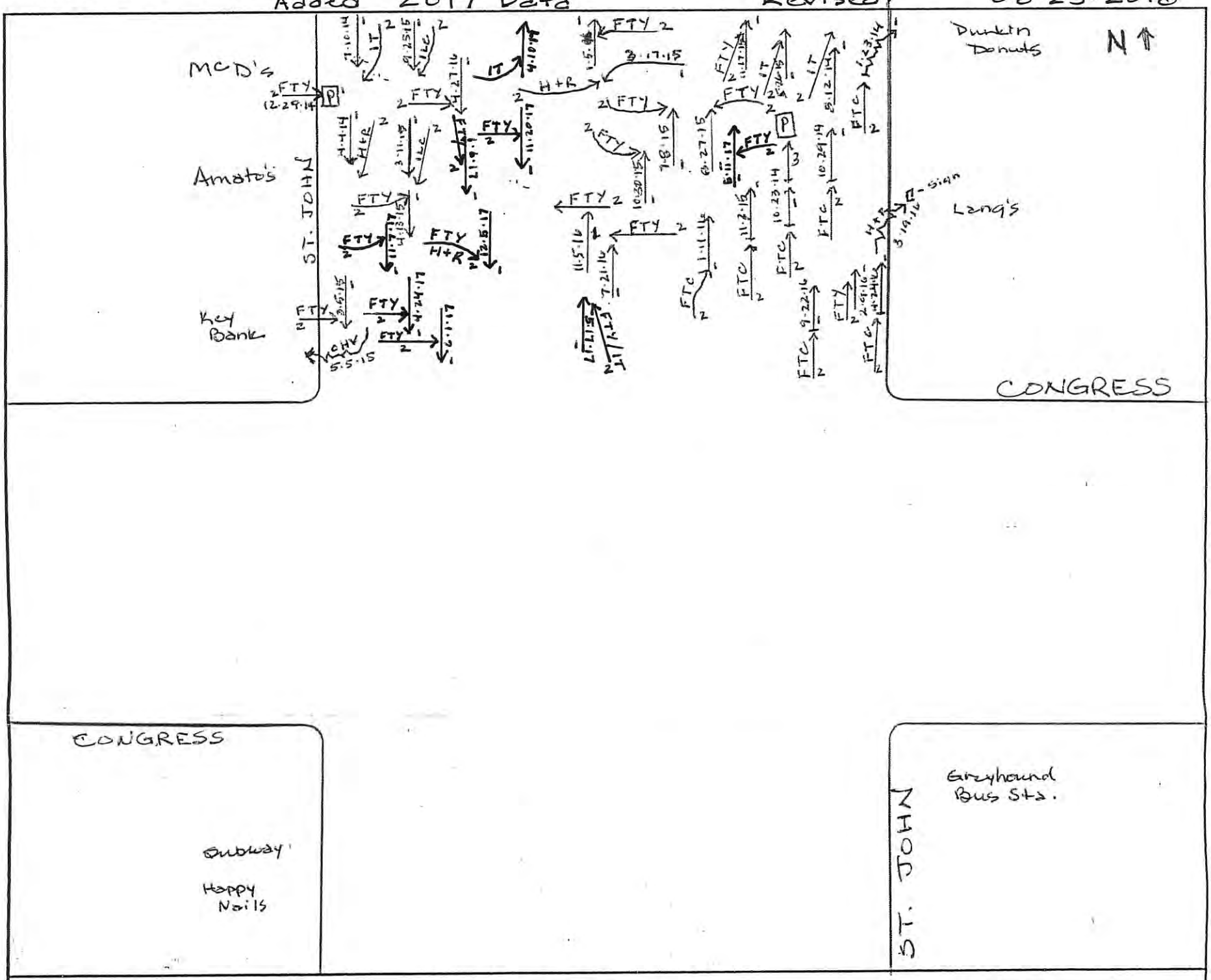
SHEET 1 OF 3

LOCATION Intersection of Congress Street & St. John Street

TOWN Portland, Maine NODE NO(S) 16765 - 66777

YEARS REVIEWED 2014 - 2016 DATE PREPARED 11.21.2017

Added 2017 Data Revised: 08.23.2018



CRITICAL RATE FACTOR _____ EQUIV. PROP. DAMAGE ACC/YEAR _____ ACC/MEV _____

LIGHT

1. DAWN (MORNING) 2. DAYLIGHT 3. DUSK (EVENING)
4. DARK (ST. LIGHTS ON) 5. DARK (NO ST. LIGHTS) 6. DARK (ST. LIGHTS OFF)
7. OTHER

ROAD SURFACE

1. DRY 2. WET 3. SNOW/SLUSH–SANDED
4. ICE/PACKED SNOW–SANDED 5. MUDDY 6. DEBRIS
7. OILY 8. SNOW/SLUSH–NOT SANDED 9. ICE–PKD. SNOW–NOT SANDED
10. OTHER

APPARENT CONTRIBUTING FACTORS – HUMAN

1. NO IMPROPER ACTION 2. FAIL TO YLD. RIGHT OF WAY 3. ILLEGAL UNSAFE SPEED
4. FOLLOW TOO CLOSE 5. DISREGARD TRAFFIC CONTROL DEVICE
6. DRIVING LEFT OF CENTER–NO PASSING 7. IMPROPER PASS–OVERTAKING
8. IMP. UNSAFE LANE CHANGE 9. IMP. PARKING START/STOP 10. IMPROPER TURN
11. UNSAFE BACKING 12. NO SIGNAL OR IMP. SIGNAL 13. IMPEDING TRAFFIC
14. DRIVER INATTENTION–DISTRACTION 15. DRIVER INEXPERIENCE
16. PEDEST. VIOLATION ERROR 17. PHYSICAL IMPAIRMENT 18. VISION OBSCURED–WINDSHIELD GLASS
19. VISION OBSCURED–SUN/HEADLIGHTS
20. OTHER VISION OBSCUREMENT 30. OTHER HUMAN VIOLATION FACTOR
31. HIT AND RUN 51. UNKNOWN

– VEHICULAR

41. DEFECTIVE BRAKES 42. DEFECTIVE TIRE/FAILURE 43. DEFECTIVE LIGHTS
44. DEFECTIVE SUSPENSION OR FACTOR 45. DEFECTIVE STEERING 50. OTHER VEHICLE DEFECT
51. UNKNOWN

SYMBOLS

ANGLE, PEDESTRIAN, FATAL ACCIDENT
BACKING, REAR END
FIXED OBJECT, SIDE SWIPE, VEHICLE (MOVING)
HEAD ON, TURNING MOVE, BICYCLE
OVERTURN, CHANGE LANE, ANIMAL
PARKED VEHICLE, OUT OF CONTROL, SLED

WEATHER

C – CLEAR
F – FOG
R – RAIN
SL – SLEET
S – SNOW
CL – CLOUDY
XW – CROSS WINDS

INJURIES

K – FATAL
A – INCAPACITATING
B – NON–INCAPACITATING
C – POSSIBLE INJURY

S:/SHEETS/COLLISION DIAGRAM.DWG

COLLISION DIAGRAM

LOCATION Intersection of Congress Street & St. John Street

TOWN Portland, ME NODE NO(S) 16765 - 66777

YEARS REVIEWED 2014 - 2016 DATE PREPARED 11.21.2017

Added 2017 Data Revised: 08.23.2017

REPORT NO.	DATE	TIME	INJURIES K	A	B	C	LIGHT	ROAD SURFACE	ACF	OTHER
14-0299	01-23-14	06:31				1	2	1	4/31	
14-1129	04-04-14	13:00					2	1	31	
14-1990	07-10-14	06:08					2	1	10	
14-2345	08-12-14	14:30			1		2	1	10	
14-3141	10-23-14	18:01					4	2	4	
14-3202	10-29-14	16:03					2	1	4	
14-3836	12-29-14	00:55			1		4	1	2	
15-1075	03-05-15	14:47					2	1	2	
15-1142	03-11-15	08:00					2	1	2/8/14	
15-1208	03-17-15	14:58					2	1	31	
15-1458	04-13-15	12:00					2	1	2	Suspended license
15-1654	05-05-15	15:24				3	2	1	30	
15-1861	05-26-15	20:18					3	1	10	
15-2343	07-08-15	19:21					2	1	2	
15-2908	08-27-15	15:49				1	2	1	2	
15-3228	09-25-15	16:04					2	1	8	
15-3635	10-30-15	10:41					2	1	2	
15-3684	11-03-15	11:50					2	1	4	
15-3841	11-17-15	12:17					2	1	2/7	
16-0030	01-05-16	15:09					2	1	2	
16-0108	01-11-16	14:15					2	1	4	Expired License
16-0489	02-09-16	16:09					2	1	2	
16-0902	03-19-16	18:45					4	1	31	
16-1219	04-24-16	16:24					2	1	4	Permited Driver only
16-1251	04-27-16	12:02					2	1	2	
16-2261	07-21-16	17:52				1	2	1	2	Suspended NH License
16-2929	09-22-16	11:08					2	1	4	
16-3415	11-05-16	10:30					2	1	2	

S:/SHEETS/COLLISION DIAGRAM.DWG

COLLISION DIAGRAM

SHEET 3 OF 3

LOCATION Congress St. / St. John St.

TOWN Portland, Maine NODE NO(S) 16765 - 66777

YEARS REVIEWED Adding 2017 Data DATE PREPARED 08.23.2018

REPORT NO.	DATE	TIME	INJURIES K	A	B	C	LIGHT	ROAD SURFACE	ACF	OTHER
17.0053	01.06.17	06:48					2	2	2	
17.1210	04.10.17	08:15					2	1	10	
17.1355	04.24.17	11:55					2	1	2	
17.1553	05.11.17	16:58				2	2	1	2	
17.1615	05.17.17	18:18				1	2	1	2/10	
17.1782	06.01.17	17:08				1	2	1	2	
17.3490	11.07.17	07:49					2	1	2/14	
17.3630	11.20.17	11:31					2	1	2	
17.3783	12.05.17	17:49					4	2	31	

S:/SHEETS/COLLISION DIAGRAM.DWG

Section 3
Development Entrances and Exits

3.A. Entrance and Exit Locations

Vehicular access to the specific site is currently via an access to the employee parking garage on Gilman Street and an access to the visitor parking garage on Congress Street with a second access to the visitor parking garage on Crescent Street, and a pick-up and drop-off area in front of the East Tower off Bramhall Street.

Vehicular access to the proposed MMC expansion includes a full movement access with Congress Street, primarily to the pick-up / drop-off area. The existing Congress Street access to the visitor garage will be maintained and a vehicular connection will be provided between the existing visitor garage and the pick-up / drop-off area. This new connection will eliminate the need for traffic to recirculate onto Congress Street, thus reducing off-site conflicts. All other MMC site accesses will be maintained.

3.B. Plan View

A proposed site plan is provided in the Site Plan application provided under separate cover.

- Frontage Road(s) – Congress Street and Gilman Street
- Posted Speed Limit – 25 mph
- Sight Lines – The posted speed on Congress Street is 25 mph, which requires a MaineDOT and City available sight distance of 200 feet. The sight distances at the proposed site access currently appear to meet the requirements; however, we recommend that this be reviewed throughout the review process to ensure no obstacles such as signing, vegetation, or structures restrict proper sight distances.

Section 4
Title, Right, or Interest

4.A. Evidence of Title, Right, or Interest

A copy of the deeds to the property are included in Attachment in 4A.

4.B. Attachments

Attachment 4A – Deeds

Attachment 4A

Deeds

Know All Men by These Presents,

(2)

That We, Henry H. Grant and Gladys H. Grant, both of Portland in the County of Cumberland and State of Maine,

in consideration of one ($1.00) dollar and other valuable considerations

paid by Maine Medical Center, a corporation duly organized and existing under the laws of the State of Maine and located at said Portland,

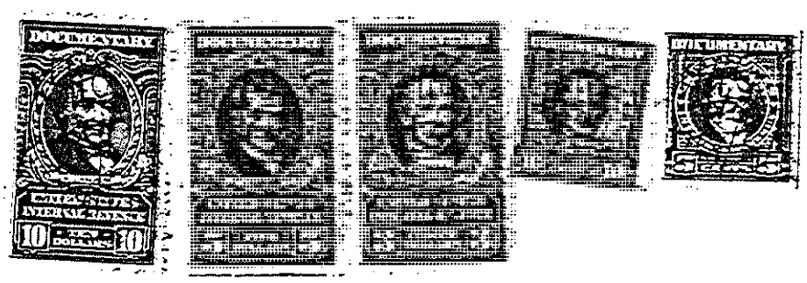
the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors

heirs and assigns forever, a certain lot or parcel of land with the buildings thereon, situated in Portland in the County of Cumberland and State of Maine, on the northwesterly side of Bramhall Street, bounded and described as follows:

Commencing at the southwesterly corner of land, now or formerly, of James Miller and Charlotte Johnson on Bramhall Street; thence northwesterly by land of said James Miller and Charlotte Johnson, sixty (60) feet to land formerly of William J. Knowlton; thence southwesterly along said Knowlton land, parallel with said street, fifty-five (55) feet to a corner of land formerly of William J. Knowlton; thence parallel with first mentioned line sixty (60) feet, more or less, to said street; thence northeasterly by said street fifty-five (55) feet to the place of beginning.

Being the same premises conveyed to us by Russell Fanning by deed recorded in Cumberland County Registry of Deeds in Book 1833, Page 415, and are conveyed subject to the conditions contained in said deed.

The Grantee herein, as part of the consideration hereof, assumes and agrees to pay taxes for the taxable year 1961.



To have and to hold the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said

Maine Medical Center, its successors

~~heirs~~ and assigns, to its and their use and behoof forever.

And we do ~~covenant~~ with the said Grantee its successors, / ~~heirs~~ and assigns, that we are lawfully seized in fee of the premises, that they are free of all incumbrances;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs shall and will ~~Warrant and Defend~~ the same to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

~~In Witness Whereof.~~ We the said Henry H. Grant

and Gladys H. Grant, being husband and

wife ~~of the said~~

joining in this deed as Grantor s, and relinquishing and conveying all right by descent and all other rights in the above described premises, have hereunto set our hand s and seals this thirty-first day of July in the year of our Lord one thousand nine hundred and sixty-one.

~~Signed, Sealed and Delivered~~
~~in presence of~~

R. E. Jensen	Gladys H. Grant

~~State of Maine.~~ Cumberland, ~~ss.~~ July 31, 1961.

Personally appeared the above named Henry H. Grant

and acknowledged the foregoing instrument to be his free act and deed.

Before me,

Norman E. Jensen

Justice of the Peace
~~Notary Public~~

AUG 4 1961

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE

Received at 10 H 27 M A M, and recorded in

BOOK 2619 PAGE 499 Lowell R. Thompson Register

Phillinde 1881 3/

Warranty Deed

FROM

Henry H. Grant, et al

TO

Maine Medical Center

Dated July 31, 1961

State of Maine.

_____ ss. Registry of Deeds

Received AUG 4 1961 19____

at _____ H., _____ M., _____ M., and

recorded in Book _____ Page _____

ATTEST:

_____ REGISTER

FROM THE OFFICE OF

JENSEN & BAIRD
477 Congress Street
Portland, Maine

L. L. MARTIN, PORTLAND, ME.—OFFICE FURNITURE AND SUPPLIES TYPEWRITERS, ADDING MACHINES, FILING CABINETS, SAFES, ETC.

MARTIN'S FORM NO. 1 — STANDARD REGISTRY FORM

1 - 35

(3)

(No. 106)

Know All Men by these Presents,

That I, DONALD D. McPHEE of Portland in the County of Cumberland and State of Maine,

in consideration of One Dollar ($1) and other valuable considerations

paid by MAINE MEDICAL CENTER, a corporation duly organized and existing under the laws of the State of Maine and located at Portland in said County and State

the receipt whereof I do hereby acknowledge, do hereby ~~give, grant, bargain, sell and convey~~ unto the said MAINE MEDICAL CENTER, its

successors ~~Heirs~~ and Assigns forever,

the following described property:

A certain lot or parcel of land with the buildings thereon situated in said Portland and being the premises conveyed to me by Hope K. Fletcher by deed dated November 22, 1946 and recorded in Cumberland County Registry of Deeds in Book 1848, Page 160, in which deed said premises are described as follows:

Beginning at the Northeast corner of Sophia T. Jones lot, so-called, on Arsenal Street; thence Northeasterly on Arsenal Street fifty (50) feet to land of one Raymond; thence Southeasterly by line of Raymond forty-eight (48) feet, more or less, to land of one Haskell; thence Southwesterly along line of said Haskell land thirteen (13) feet and two (2) inches to a point; thence Northwesterly parallel to land of said Raymond three (3) feet to a point; thence Southwesterly along the line of said Haskell land thirty-six (36) feet, more or less, to land of said Jones; thence Northwesterly forty-six (46) feet, more or less to point of beginning.

Also conveying all my interest in and to said Arsenal Street, recently abandoned by the City of Portland.

To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said MAINE MEDICAL CENTER, its successors

~~Xxxxx~~ and Assigns, to its and their use and behoof forever.

And I do ~~covenant~~ with the said Grantee, its successors ~~Xxxxx~~ and Assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my Heirs, shall and will ~~Warrant and Defend~~ the same to the said Grantee, its successors ~~Xxxxx~~ and Assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said DONALD D. McPHEE

and I, Lorraine J. McPhee wife of the said Donald D. McPhee

joining in this deed as Grantor , and relinquishing and conveying my rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this 9th day of May in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered
in presence of

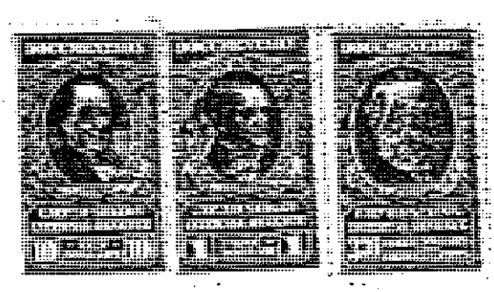
Edward F. Sams
to both

Donald D. McPhee
Lorraine J. McPhee

State of Maine.
Cumberland, ss. May 9, 1953.

Personally appeared the above named Donald D. McPhee and acknowledged the above instrument to be his free act and deed.

Before me,
Edward F. Sams
Justice of the Peace



Philbrick

320

Warranty Deed.

FROM

DONALD D. McPHEE

TO

MAINE MEDICAL CENTER

DATED May, 19 53.

State of Maine.

Cumberland ss: Registry of Deeds.

Received MAY 9 1953, 19 ,

at 2 P., 37 M., 11 M., and

recorded in Book 2127, Page 320

ATTEST:

Robert T. Crosse, REGISTER.

FROM THE OFFICE OF

VERRILL DANA WALKER PHILBRICK

& WHITEHOUSE.

No. 105. ROBERTS OFFICE SUPPLY COMPANY
Portland - Maine - Lewiston

9-37

Know all Men by these Presents, (4)

That I, Henry H. Grant of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable consideration

paid by Maine Medical Center, a corporation organized and existing under the laws of the State of Maine and located at said Portland,

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine Medical Center, its Successors ~~heirs~~ and assigns forever,

a certain lot or parcel of land with the buildings thereon situated between Bramhall and Arsenal Streets in said Portland, adjoining land now or formerly belonging to Sophia P. Jones, and more particularly bounded and described as follows:

Beginning on the northerly side line of said Bramhall Street, at the southwesterly corner of said Jones' land; thence westerly by said Bramhall Street, twenty-five (25) feet to a stake and from these two points extending northerly adjoining said Jones land, keeping the width of twenty-five (25) feet, to Arsenal Street.

Excepting and reserving however, a certain lot or parcel of land with the buildings thereon out of the aforesaid property, a conveyance by Westprom Realty Company to Maud L. and Janice M. Pillsbury by deed dated January 23, 1946 and recorded in Cumberland County Registry of Deeds in Book 1803, Page 444, to which reference may be had.

Meaning and intending to convey a parcel of land at the rear of 26 Bramhall Street, which parcel of land is approximately 26'x25' and contains a garage thereon.

Being the same premises conveyed to me by Westprom Realty Company by their warranty deed dated April 11, 1951 and recorded in said Registry of Deeds in Book 2040, Page 192.

To Have and to Hold the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said

Maine Medical Center, its Successors

~~heirs~~ and assigns, to its and their use and behoof forever.

And I do COVENANT with the said Grantee , its/Successors ~~heirs~~ and assigns, that I am lawfully seized in fee of the premises, that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will WARRANT AND DEFEND the same to the said Grantee , its Successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said

Henry H. Grant

and I, Gladys H. Grant,

wife of the said

Henry H. Grant

joining in this deed as Grantor , and relinquishing and conveying my right by descent and all other rights in the above described premises, have hereunto set our hands and seals this 4th day of ~~June~~ September in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered
in presence of

H. Edwin Hall

Henry H. Grant.

Gladys H. Grant

State of Maine,
Cumberland, } ss. September 4, 1953.

Personally appeared the above named

HENRY H. GRANT

and acknowledged the above instrument to be his free act and deed.

Before me,

H. Edwin Hall

~~Justice of the Peace.~~
Notary Public
My Commission Expires June 29, 1955



Phillrick

116

Warranty Deed

From

HENRY H. GRANT

To

MAINE MEDICAL CENTER

Dated, ... *1953*

State of Maine.

Cumberland ..... ss. Registry of Deeds.

Received SEP 9 1953 at 9 h., 50 M., A M., and recorded in Book 2147 Page 110

Attest: Robert N. Crommett
Register.

FROM THE OFFICE OF

Warren E. Winslow, Esq.
443 Congress Street
Portland, Maine

LORING, SHORT & HARMON, Law Stationers
PORTLAND, MAINE

9-50

MORTGAGE AND SECURITY AGREEMENT

KNOW ALL MEN BY THESE PRESENTS, that MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine, having its principal place of business at 22 Bramhall Street, in Portland, County of Cumberland, State of Maine (hereinafter referred to as the Grantor), for and in consideration of the sum of ONE MILLION SEVEN HUNDRED NINETY-NINE THOUSAND FIVE HUNDRED SIXTY-NINE ($1,799,569) DOLLARS, paid by MAINE SAVINGS BANK, a banking corporation organized and existing under the laws of the State of Maine, having its principal office at One Maine Savings Plaza, in the said Portland, County of Cumberland and State of Maine (hereinafter called the Grantee), the receipt of which is hereby acknowledged, does give, grant, bargain, sell, and convey unto the said Grantee, its successors and assigns, forever, the following-described premises:

> A certain lot or parcel of land with the buildings and improvements thereon situated at and near Gilman Street, Congress Street, Charles Street, Brackett Street, Bramhall Street and the Western Promenade, in the City of Portland, County of Cumberland and State of Maine, more particularly described in Schedule A attached hereto, which Schedule A is hereby made a part of this Mortgage and Security Agreement by reference thereto.

Also conveying and granting hereby as part of the realty and in addition to said realty and as property mortgaged hereunder, all of the following articles now or hereafter owned or acquired by Grantor, or in which it may now or hereafter acquire an interest, and now or hereafter located on the above-described premises or used therewith as follows: All machinery, equipment, furnishings, furniture, fixtures, chattels and articles of tangible personal property, including, without limitation, all hospital and medical diagnostic, treatment and convalescent equipment, machinery and supplies, all beds and bedding, all food service and cafeteria equipment, machinery and supplies, all other machinery, equipment and chattels used or usable in the operation of a hospital and full service medical center, furnaces, boilers, oil burner, refrigeration, air conditioning and sprinkler systems, awnings, screens, window shades, motors, dynamos, incinerators, plants and shrubbery, whether now owned or hereafter from time to time acquired by the Grantor, together with all substitutions, replacements, additions, attachments, accessories, accretions thereto or thereof, now or in the future, situated or located on, or used or usable in connection with the maintenance and/or operation of hospital and medical center now constructed and any other facilities to be constructed on the premises described in said Schedule A attached hereto. If the lien of this mortgage on any fixtures or personal property be subject to a lease agreement, conditional sale agreement or chattel mortgage covering such property, then in the event of any default hereunder all the rights, title and interest of the Grantor in and to any and all deposits made thereon or therefor are hereby assigned to the Grantee, together with the benefit of any payments now or hereafter made thereon. There are also transferred, set over and assigned by Grantor to Grantee, its successors and assigns, hereby all leases and use agreements of machinery, equipment and other personal property of Grantor in the categories hereinabove set forth, under which Grantor is the lessee of, or entitled to use, such items, and Grantor agrees to execute and deliver to Grantee specific separate assignments to Grantee of such leases and agreements when requested by Grantee; and nothing herein shall obligate Grantee to perform any obligations of Grantor under such leases, or agreements, unless it so chooses, which obligations Grantor hereby covenants and agrees to well and punctually perform.

As further security for payment of the indebtedness and performance of the obligations, covenants and agreements secured hereby, Grantor hereby transfers, sets over and assigns to Grantee:

a. All rents, profits, revenues, royalties, bonuses, rights and benefits under any and all leases or tenancies now existing or hereafter created of the premises or any part thereof, with the right to receive and apply the same to said indebtedness, and Grantee may demand, sue for and recover such payments, but shall not be required to do so; provided, however, that so long as Grantor is not in default hereunder, the right to receive and retain such rents, issues and profits is reserved to Grantor. To carry out the foregoing, Grantor agrees (1) to execute and deliver to Grantee such conditional assignments of leases and rents applicable to the mortgaged premises as the Grantee may from time to time request while this mortgage and the debt secured hereby are outstanding, and further (2) not to cancel, accept a surrender of, reduce the rentals under, anticipate any rentals under, or modify any such leases or tenancies, or consent to an assignment or subletting thereof, in whole or in part, without Grantee's written consent. Nothing herein shall obligate the Grantee to perform the duties of the Grantor as landlord or lessor under any such leases or tenancies, which duties Grantor hereby covenants and agrees to well and punctually perform.

b. All judgments, awards of damages and settlements hereafter made as a result or in lieu of any taking of the premises or any interest thereon or part thereof under the power of eminent domain, or for any damage (whether caused by such taking or otherwise) to the premises or the improvements thereon or any part thereof, including any award for change of grade of streets. Grantee may apply all such sums or any part thereof so received on the indebtedness secured hereby in such manner as it elects or, at its option, the entire amount or any part thereof so received may be released. Grantor hereby irrevocably authorizes and appoints Grantee its attorney-in-fact to collect and receive any such judgments, awards, and settlements from the authorities or entities making the same, to appear in any proceeding therefor, to give receipts and acquittances therefor, and to apply the same to payment on account of the debt secured hereby, whether then matured or not; and the Grantor will execute and deliver to the Grantee on demand such assignments and other instruments as the Grantee may require for said purposes and will reimburse the Grantee for its costs (including reasonable counsel fees) in the collection of such judgments and settlements.

Receipt of rents, awards, and any other moneys or evidences thereof, pursuant to the provisions of the foregoing paragraphs a. and b. and any disposition of the same by Grantee shall not constitute a waiver of the right of foreclosure by Grantee in the event of default or failure of performance by Grantor of any covenant or agreement contained herein or any note secured hereby.

TO HAVE AND TO HOLD the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to Grantee, its successors and assigns, to its and their use and behoof forever; PROVIDED NEVERTHELESS, that if Grantor pays to Grantee the sum of ONE MILLION SEVEN HUNDRED NINETY-NINE THOUSAND FIVE HUNDRED SIXTY-NINE ($1,799,569.00) DOLLARS, with interest and other charges, as applicable, in accordance with all the terms and conditions of a certain Mortgage Note of even date signed and given by Grantor to Grantee, and until such payment performs all of Grantor's obligations, covenants and agreements contained herein and contained in said promissory note, then this deed, as also said certain promissory note, shall be void, otherwise shall remain in full force.

Grantor covenants and agrees with Grantee as follows:

1. That Grantor is lawfully seized of an indefeasible estate in fee simple, free from encumbrances, except as may have been specifically noted herein, or in Schedule A attached hereto, and has good right and power to convey the premises to Grantee to hold as aforesaid, and that Grantor shall and will Warrant and Defend the same to Grantee forever against the claims and demands of all persons, except as aforesaid.

2. That Grantor shall pay all sums secured hereby when due.

3. That Grantor will not permit or suffer the use of any of the mortgaged property for any purposes other than hospital or medical center purposes.

4. That the Loan Guaranty Agreement between the Grantor and the Secretary of Health, Education,and Welfare, which is being executed simultaneously herewith, is incorporated herein and made a part of this mortgage.

5. That upon default hereunder Grantee shall be entitled, in addition to any other rights given by this Agreement or by law, to the appointment of a receiver by any court having jurisdiction, without notice, to take possession and protect the property described herein and operate same and collect the rents, profits, and income therefrom.

6. That the Grantor will keep the building and improvements now existing or hereafter erected on the mortgaged property insured against loss by fire and such other hazards, casualties, and contingencies, as may be stipulated by the Secretary of Health, Education, and Welfare upon the guarantee of the Note and other hazards, all as may be required from time to time by the Grantee, and all such insurance shall be evidenced by standard fire and extended coverage insurance policy or policies, in amounts not less than necessary to comply with the applicable Coinsurance Clause percentage, but in no event shall the amounts of coverage be less than eighty per centum (80%) of the insurable value and in no event less than the unpaid balance of the debt secured hereby, and in default thereof the Grantee shall have the right to obtain such insurance at the cost of Grantor, such cost to be secured hereby. Such policies shall be endorsed with standard mortgagee clause with loss payable to the Grantee and the Secretary of Health, Education, and Welfare, as their interests may appear, and shall be deposited with the Grantee; and that if the premises mortgaged hereby, or any part thereof, shall be damaged by fire or other hazard against which insurance is held as hereinabove provided, the amounts paid by any insurance company in pursuance of the contract of insurance to the extent of the indebtedness then remaining unpaid, shall be paid to the Grantee and, at the option of Grantee and the Secretary of Health, Education, and Welfare, may be applied to the debt or released for the repairing or rebuilding of the premises.

7. That at the request of Grantor with consent of Grantee, or at the option of Grantee, the principal balance secured hereby may be reamortized on terms acceptable to the Secretary of Health, Education, and Welfare if a partial prepayment results from an eminent domain or condemnation award or from a fire or casualty insurance payment where there is a resulting loss of project income.

8. That in order more fully to protect the security of this Mortgage, together with, and in addition to, such payments of interest, or of principal and interest, Grantor will pay to the Grantee, on the

dates each month that such payments are due, until the Note is fully paid, the following sums:

(a) A sum equal to the ground rents, if any, next due, plus the premiums that will next become due and payable on policies of fire and other property insurance covering the premises covered hereby, plus water rates, taxes and assessments next due on the premises covered hereby (all as estimated by the Grantee) less all sums already paid therefor divided by the number of months to elapse before one month prior to the date when such ground rents, premiums, water rates, taxes and assessments will become delinquent, such sums to be held by Grantee in escrow to pay said ground rents, premiums, water rates, taxes, and special assessments; no interest shall be due on sums so held;

(b) All payments mentioned in the preceding subsection of this paragraph and all payments to be made under the Note secured hereby shall be added together and the aggregate amount thereof shall be paid each (month) in a single payment to be applied by Grantee to the following items in the order set forth:

(I) ground rents, taxes, special assessments, water rates, fire and other property insurance premiums;

(II) interest on the Note secured hereby;

(III) amortization of the principal of said Note;

9. In the event of Grantor's failure to pay any sums provided for in this Mortgage, the Grantee, at its option, may pay the same. Any excess funds accumulated under (a) of the preceding paragraph remaining after payment of the items therein mentioned, shall be credited to subsequent periodic payments of the same nature required thereunder; but if any such items shall exceed the estimate therefor, or if the Grantor shall fail to pay any other governmental or municipal charge, the Grantor shall forthwith make good the deficiency or pay the charge before the same become delinquent or subject to interest or penalties and in default thereof the Grantee may pay the same. All sums paid by the Grantee shall be added to the principal of the debt secured hereby and shall bear interest from the date of payment at the rate specified in the Note and shall be due and payable on demand. If the property is sold under foreclosure or is otherwise acquired by the Grantee after default, any remaining balance of the accumulations under (a) of the preceding paragraph shall be credited to the principal of the Mortgage as of the date of the commencement of foreclosure proceedings or as of the date the property is otherwise acquired.

10. That Grantor will keep the premises above conveyed in good order and condition and will not commit or permit any waste thereof, reasonable wear and tear excepted, and in the event of the failure of the Grantor to keep the buildings on said premises and those to be erected on said premises, or improvements thereon, in good repair, the Grantee may make such repairs as in its discretion it may deem necessary for the proper preservation thereof, and any sums paid for such repairs shall bear interest from the date of payment at the rate specified in the Note, shall be due and payable on demand and shall be fully secured by this Mortgage.

11. That Grantor will not voluntarily create, permit or suffer

to be created against the property subject to this Mortgage any lien or liens inferior or superior to the lien of this Mortgage and further that it will keep and maintain the same free from the claim of all persons supplying labor or materials which will enter into the construction of any and all buildings and improvements now being erected or to be erected on said premises.

12. That Grantor further covenants and agrees that this mortgage shall constitute a security agreement with respect to any and all machinery, equipment, chattels, articles of personal property, and fixtures described and included in this mortgage, and all additions, accessions, substitutions, and replacements thereto and therefor, and all of which are hereinafter referred to as the collateral, and Grantor hereby grants and conveys to Grantee, its successors and assigns, a security interest therein. That upon default of any term, condition or covenant of this mortgage and acceleration of any indebtedness hereby secured, the Grantee may, at its discretion, require the Grantor to assemble the collateral and make it available to the Grantee at a place reasonably convenient to both parties to be designated by the Grantee. That the Grantee shall give the Grantor notice, by registered mail, postage prepaid, of the time and place of any public sale or other intended disposition thereof is to be made by sending notice to the Grantor at least five days before the time of the sale or other disposition, which provisions for notice the Grantor and Grantee agree are reasonable; provided, however, that nothing herein shall preclude the Grantee from proceeding as to both real and personal property in accordance with Grantee's rights and remedies in respect of the real property. Grantee shall have all of the remedies of a secured party under the Uniform Commercial Code as now in effect in the State of Maine and such further remedies as may from time to time hereafter be provided in Maine for a secured party. Grantor agrees that all rights of Grantee as to said collateral and as to said real estate, and rights and interests appurtenant thereto, may be exercised together or separately and further agrees that in exercising its power of sale as to said collateral and as to said real estate, and rights and interest appurtenant thereto, the Grantee may sell the collateral or any part thereof either separately from or together with the said real estate, rights and interests appurtenant thereto, or any part thereof, all as the Grantee may in its discretion elect.

13. That Grantor shall maintain full and correct books and records showing in detail the earnings and expenses of the mortgaged premises; will permit the Grantee and its representatives to examine said books and records and all supporting vouchers and data any time and from time to time upon request by the Grantee at the mortgaged premises or at such other place in the County in which the mortgaged premises are located as such books and records are customarily kept; and Grantor hereby agrees to furnish to Grantee within one hundred twenty (120) days after the close of each fiscal year an audited financial statement of the operation of the premises reflecting income (including sources thereof) and expenses, such statement to be prepared by a certified or other competent accountant satisfactory to the Grantee.

14. That Grantor within seven (7) days upon request in person or within ten (10) days upon request by mail shall furnish a duly acknowledged written statement setting forth the amount of the debt secured by this mortgage, and stating either that no offsets or defenses exist against the mortgage debt, or, if such offsets or defenses are alleged to exist, the nature thereof.

15. That in case of foreclosure of this Mortgage, and as often

as any proceedings shall be taken to foreclose the same, the Grantor will pay to the Grantee a reasonable attorney's fee, and the same shall be a further charge and lien upon the said premises.

16. That no sale of the premises hereby mortgaged and no forebearance on the part of the Grantee, and no extention of the time for the payments of the debt hereby secured given by the Grantee, shall operate to release, discharge, modify, change, or affect the original liability of the Grantor herein either in whole or in part.

17. That in the event of any default, as herein described, this mortgage may be foreclosed in any manner prescribed or permitted by law, appraisement being hereby waived; and out of all the monies arising from a sale to retain the amount then due or to become due according to the conditions of this instrument together with the costs and charges of making such sale, and the overplus, if any there be, shall be paid by the party or parties making such sale to the Grantor, its successors and assigns.

18. That no waiver of any covenant herein or of the Note secured hereby shall at any time thereafter be held to be a waiver of the terms hereof or of the Note secured hereby.

19. That receipt and disposition of rents, income of the premises, insurance proceeds, eminent domain awards, or any other sums under the provisions of the mortgage, the note, or other loan documentation by Grantee shall not be a waiver or release of any rights of the Grantee, including but not limited to, the right of foreclosure or acceleration of the note, whether such receipt or disposition shall be before or after exercise of any such rights.

20. That Grantee hereof, its successors and assigns, shall have The Statutory Power of Sale in addition to all other rights of a Mortgagee allowed by law and this mortgage in case of default in any term or condition contained or referred to herein.

21. That it is an additional condition of this Mortgage and Security Agreement for breach of which foreclosure may be claimed and for breach of which all indebtedness secured hereby may be declared due and payable at once, that title to the within described mortgaged premises shall not pass be deed, mortgage or other means, or operation of law, from Grantor, or from any subsequent title holder, either voluntarily or involuntarily. This condition shall continue until all indebtedness and obligations secured hereby are satisfied, and permission given, or election not to foreclose or accelerate said indebtedness by Grantee, its successors or assigns, as to any one such transfer, shall not constitute a waiver of any rights of Grantee, its successors or assigns, as to any subsequent such transfer of title as to which this condition shall remain in full force and effect. The term title as used herein shall mean the estate of the Grantor subject to the lien of this mortgage.

22. This Mortgage and Security Agreement is expressly made subject and inferior to a Mortgage (FHA Form 4125-B) and to Security Agreement both of even date herewith executed and delivered by Grantor herein to Grantee herein encumbering the real and personal property herein described and securing a Mortgage Note (FHA Form 4125-d) of even date herewith in the amount of $3,245,431.00, all of which documents are hereinafter collectively called the FHA Mortgage. Grantor herein shall perform, or cause to be performed, when due all obligations of the mortgagor under the terms

and provisions of the FHA Mortgage, specifically including prompt payment when due of all indebtedness secured and evidenced thereby. Should Grantor herein fail to comply with its obligatins set forth in this paragraph 22, such failure shall constitute a default under the terms and provisions of this Mortgage and Security Agreement and, in addition to any other rights which the Grantee may have hereunder and by operation of law, the Grantee herein shall have the right, but not the obligation, to make all payments and to do all things to render said FHA Mortgage current, and all advances made for such purpose, including interest paid thereon at the rate specified in said FHA Mortgage Note, shall be payable by Grantor herein to Grantee herein upon demand by Grantee herein and, to the extent permitted by law, all such advances shall be secured by the lien of this Mortgage and Security Agreement.

23. That in the event of default in making any payment provided for herein or in the Note secured hereby, or in the event of a breach of any other stipulation, agreement, condition or covenant of this mortgage, including any transfer of title to the mortgaged premises without permission of Grantee as set forth in paragraph 21 hereof, and if such default or breach is not cured prior to the expiration of 90 days after the Secretary of Health, Education, and Welfare, aforesaid, receives notification from the holder of the loan of such default or breach then in any such event the whole principal sum of said Note shall, at the option of the Grantee, its successors and assigns, as such holder, be deemed to have become immediately due, and the same with interest thereon and with all other costs and charges, shall thereupon be collectible by foreclosure of this mortgage; provided, however, such notice to said Secretary of Health, Education, and Welfare and such 90 day period shall not be necessary should the guaranty of this mortgage indebtedness be terminated or become void pursuant to its terms and Grantee receives written notice thereof from said Secretary.

The covenants herein contained shall bind, and the benefits and advantages shall inure to, the respective successors and assigns of the parties hereto and to the extent permitted by law shall bind any future owner of the mortgaged premises or any part thereof. Whenever used, the singular number shall include the plural and the plural the singular, and the use of any gender shall include all genders.

IN WITNESS WHEREOF, the said Grantor has caused these presents to be signed in its name by JACK R. DYSON, its Treasurer, and its corporate seal to be hereunto affixed this 14th day of February, 1975.

Signed, Sealed and Delivered in the Presence of:

Robert B. Patterson, Jr.

MAINE MEDICAL CENTER, a Maine corporation

BY _____
Its Treasurer

(CORPORATE SEAL)

STATE OF MAINE
COUNTY OF CUMBERLAND, ss. February 14, 1975

Then personally appeared the above-named Jack R. Dyson as Treasurer of Maine Medical Center, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said corporation.

Before me.

_____
Notary Public

MY COMMISSION EXPIRES
MAY 2, 1980

SCHEDULE A

GRANTOR: MAINE MEDICAL CENTER

GRANTEE: MAINE SAVINGS BANK

DATE : February 14, 1975

A certain lot or parcel of land together with the buildings and improvements thereon, located in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows: Beginning at a point at the intersection of the southeasterly side of Congress Street and the easterly side of Gilman Street, said point being marked by an iron pin; thence North 79° 44½' East, four hundred twenty and seventy-nine hundredths (420.79) feet to a point marked by an iron; thence South 18° 24' East by land now or formerly of Brophy, one hundred forty-eight and eighty-five hundredths (148.85) feet, more or less, to an iron; thence North 72° 01' East by said Brophy land, seventy-four and eight tenths (74.8) feet, more or less, to Charles Street; thence by Charles Street, South 18° 24' East, three hundred fifty-seven and twenty-three hundredths (357.23) feet to a point; thence South 18° 04½' East, ninety-eight and eighty hundredths (98.80) feet to a point on the northwesterly terminus of Brackett Street; thence South 62° 24' West by Brackett Street, thirty-eight and fifty-seven (38.57) feet to a point; thence South 33° 29' East by said Brackett Street, sixty and thirty-two hundredths (60.32) feet to a point; thence South 57° 21½' East by said Brackett Street, fifty and eighteen hundredths (50.18) feet to a point and land now or formerly of Gemma A. McKenzie et al; thence South 61° 08½' West by said McKenzie land, forty-two and ninety-six hundredths (42.96) feet to a point; thence South 27° 36' East by said McKenzie land, sixty-two and twenty-eight hundredths (62.28) feet, more or less, to the northerly side of Bramhall Street; thence South 61° 00½' West by said Bramhall Street, five hundred nine and fifty-eight hundredths (509.58) feet to a point in the Western Promenade; thence North 50° 49' 20" West, one hundred fifty-one and thirty-nine hundredths (151.39) feet to a point on the southeasterly line of Arsenal Street; thence North 62° 24' East by Arsenal Street, fifty (50) feet to a point at the easterly terminus of Arsenal Street; thence North 27° 36' West by said Arsenal Street and by land conveyed by the Maine Medical Center to the City of Portland by deed dated August 4, 1972, and recorded in Cumberland County Registry of Deeds in Book 3278, Page 212, one hundred (100) feet to a point; thence South 85° 56' West by said City of Portland land, ninety-four and two hundredths (94.02) feet, more or less, to Gilman Street; thenc North 04° 04' West by said Gilman Street, six hundred ninety-five and twenty-five hundredths (695.25) feet, more or less, to said Congress Street and the point of beginning.

Being the same premises shown on a plan entitled "Plan of Property in Portland, Maine made for Maine Medical Center", H.I. & E.C. Jordan-Surveyors, dated May 31, 1966 and updated and certified on June 13, 1966, July 7, 1966, October 26, 1972, January 24, 1975 and February 12, 1975.

COPY

such default or breach then in any such event the entire unpaid principal balance of this mortgage note plus accrued interest, at the option of the holder hereof shall become immediately due and payable; provided, however, such notice to said Secretary and such 90 day period shall not be necessary should the guaranty of this mortgage note be terminated or become void pursuant to its terms and payee receives written notice thereof from said Secretary.

The payments due hereunder shall be made to Maine Savings Bank at its office at One Maine Savings Plaza, Portland, Maine 04111, unless another holder or address be given in writing to the parties liable herefor.

All parties to this mortgage note, whether principal, surety, guarantor, or endorser, hereby waive presentment for payment, demand, protest, notice of protest, and notice of dishonor.

Signed and Sealed the day and year first above written.

WITNESS:
Thomas F. Trechette
Robert B. Patterson Jr.

MAINE MEDICAL CENTER, a Maine corporation

By [signature]
Its Treasurer

(CORPORATE SEAL)

THIS IS TO CERTIFY that this is the Note described in and secured by said Mortgage and Security Agreement of even date herewith and in the same principal amount as herein stated and secured by real estate and personal property situated in the City of Portland, Cumberland County, Maine.

Dated: February 14, 1975

Louis A. Wood
Notary Public

MY COMMISSION EXPIRES
MAY 2, 1980

COPY

3

MORTGAGE NOTE

$1,799,569.00

Portland, Maine
February 14, 1975

FOR VALUE RECEIVED, the undersigned, MAINE MEDICAL CENTER, a Maine corporation located in the City of Portland, County of Cumberland and State of Maine, promises to pay to MAINE SAVINGS BANK, a Maine banking corporation, or order, at its principal place of business at One Maine Savings Plaza in the said City of Portland, County of Cumberland and State of Maine, the principal sum of ONE MILLION SEVEN HUNDRED NINETY-NINE THOUSAND FIVE HUNDRED SIXTY-NINE ($1,799,569.00) DOLLARS, with interest from date at the rate of seven per centum (7%) per annum on the unpaid balance thereof until paid; which principal and interest shall be paid as follows: Interest only at said rate shall be paid on the first day of March, 1975; thereafter commencing on the first day of April, 1975, monthly installments of interest and principal shall be paid in the sum of Twelve Thousand Seven Hundred Eighteen and 98/100ths ($12,718.98) Dollars each; such payments shall continue to be made monthly thereafter upon the first day of each succeeding month until the entire indebtedness has been paid in full; in any event, the balance of principal, if any, remaining unpaid, plus accrued interest at said rate, shall be paid on March 1, 2000. Said monthly installments of interest and principal shall be applied first to interest at said rate per annum upon the principal sum, or so much thereof as shall from time to time remain unpaid, and the balance thereof shall be applied to principal.

In the event any installment, or part of any installment, of principal or interest becomes delinquent for more than 15 days, there shall be due, at the option of the holder hereof, an additional sum equal to two cents ($.02) for each dollar ($1.00) of each installment so delinquent; provided, nevertheless, that as long as this mortgage note shall be guaranteed by the Secretary of the Department of Health, Education, and Welfare the amount of the monthly payment upon which such delinquency charge may be imposed shall be limited to the amount actually to be paid by the maker hereof and shall not include for such purpose any amount payable as an interest subsidy by said Secretary.

This note is secured by Mortgage and Security Agreement upon real estate and personal property situated in the City of Portland, Cumberland County, State of Maine.

Privilege is reserved to pay the debt in whole or in an amount equal to one or more monthly payments on principal next due, on the first day of any month prior to maturity upon at least thirty (30) days' prior written notice to the holder.

No default shall exist by reason of nonpayment of any required installment of principal so long as the amount of optional additional prepayments of principal already made pursuant to the privilege of prepayment set forth in this mortgage note equals or exceeds the amount of such required installment of principal.

In the event of default in the making of any payment provided for herein, including any delinquency charge, or in the event of a breach of any agreement, condition or covenant of the said Mortgage and Security Agreement given by the maker hereof to Maine Savings Bank, and if such default or breach is not cured prior to the expiration of 90 days after the Secretary of Health, Education, and Welfare, aforesaid, receives notification from the holder hereof of

(6)

(No. 106)

Know All Men by these Presents,

That We, Leola J. Noyes and William H. Noyes, Jr., both of Portland, County of Cumberland, State of Maine,

in consideration of one dollar ($1.00) and other valuable considerations

paid by Maine Medical Center, a Corporation established by law in said Portland

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center

its successors ~~Heirs~~ and Assigns forever,

the following described property:

A certain lot or parcel of land with the buildings thereon situated in said Portland between Bramhall and Arsenal Streets adjoining land formerly belonging to Sophia P. Jones and conveyed to us by Maud L. Pillsbury by deed dated October 2, 1951, recorded in Cumberland County Registry of Deeds in Book 2060, Page 419, and therein bounded and described as follows: Beginning on the northerly side of Bramhall Street at the southwesterly corner of said Jones land; thence running westerly by said Bramhall Street twenty-five (25) feet to a stake and from these two points extending northerly adjoining said Jones land keeping a width of twenty-five (25) feet, a distance of sixty-eight feet and two incles (68'2"), which distances are marked by stakes and which stakes are twenty-six (26) feet distant from the southerly boundary line of Arsenal Street.

To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said Maine Medical Center, its successors

~~Heirs~~ and Assigns, to its and their use and behoof forever.

And we do covenant with the said Grantee, its successors ~~Heirs~~ and Assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our Heirs, shall and will Warrant and Defend the same to the said Grantee, its successors ~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, We, the said Leola J. Noyes and William H. Noyes, Jr., the said grantors, both being unmarried

~~and~~ ~~wife of the said~~

~~joining in this deed as grantor, and relinquishing and conveying rights by descent and all other rights in the above described premises~~ have hereunto set our hands and seals this 12th day of June in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

Edward F. Haus
to both

Leola J. Noyes
William H. Noyes Jr.

State of Maine.
Cumberland } ss.

June 12, 1953

Personally appeared the above named Leola J. Noyes and William H. Noyes, Jr. and acknowledged the above instrument to be their free act and deed.

Before me, Edward F. Haus
Justice of the Peace



Philbrick 1st

317

Warranty Deed.

FROM

LEOLA J. NOYES, et al

TO

MAINE MEDICAL CENTER

DATED June, 1953.

State of Maine.
Cumberland, ss: Registry of Deeds.

Received JUN 12 1953, 19, at 1 H., 47 M., 8 M., and recorded in Book 2133, Page 317.

ATTEST:

Robert V. Crommett, Register.

FROM THE OFFICE OF

Verrill Dana Walker Philbrick

& Whitehouse

No. 106. ROBERTS OFFICE SUPPLY COMPANY
Portland - Maine - Lewiston

1-114

(No. 106)

Know All Men by these Presents,

That WE, FRED A. PATTERSON and ELLA H. WHIDDEN both of Derry in the County of Rockingham and State of New Hampshire, RUBY E. McKENZIE of Raymond in said County and State and ALZO F. PATTERSON of Portland in the County of Cumberland and State of Maine

in consideration of One dollar ($1.00) and other valuable considerations

paid by MAINE MEDICAL CENTER, a Corporation organized and existing under the laws of Maine and located at said Portland,

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center, its Successors

and Assigns forever,

the following described property:

A certain lot or parcel of land with the buildings thereon, situated in said Portland on the northerly side of Bramhall Street and bounded and described as follows:

Beginning on the northerly side of Bramhall Street at the southwesterly corner of land formerly of Frederick A. Carle; thence running westerly by said Bramhall Street twenty-five (25) feet to a stake or point, and from these two points extending northerly adjoining said Carle land, keeping a width of twenty-five (25) feet, to Arsenal Street, being the premises conveyed to Daniel W. Patterson by Maria M. Jose by deed dated September 12, 1921 and recorded in Cumberland County Registry of Deeds in Book 1085, Page 228.

The said Daniel W. Patterson died intestate on September 3, 1952 leaving no widow and as his sole heirs-at-law, the Grantors herein.

The Grantee as part of the consideration hereof assumes and agrees to pay the taxes for the taxable year of 1953.

Also conveying all our right, title and interest in and to Arsenal Street recently abandoned by the City of Portland, Maine.

To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said Maine Medical Center, its Successors and Assigns ~~forever~~, to its and their use and behoof forever.

And we do covenant with the said Grantee, its / Successors and Assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid.

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our Heirs, shall and will Warrant and Defend the same to the said Grantee, its Successors and Assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, We the said Fred A. Patterson and Chrystine I. Patterson, wife of the said Fred A. Patterson; Ella H. Whidden and Charles F. Whidden, husband of the said Ella H. Whidden; Ruby E. McKenzie and Elmer W. McKenzie, husband of the said Ruby E. McKenzie, and Alzo F. Patterson and Bessie E. Patterson, wife of the said Alzo F. Patterson

~~xxx~~ ~~xxxxxxxxxxxxxxxx~~

joining in this deed as Grantors, and relinquishing and conveying our rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this twentieth day of May in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

R. E. Jensen	Alzo F. Patterson
R. E. Jensen	Bessie E. Patterson
Pamela Chase	Fred A. Patterson
Pamela Chase	Chrystine I. Patterson
Arthur K. Smith	Ella H. Whidden
Arthur K. Smith	Charles F. Whidden
P. J. Campbell	Ruby E. McKenzie
P. J. Campbell	Elmer W. McKenzie

State of Maine.
Cumberland } ss.

May 20, 1953

Personally appeared the above named Alzo F. Patterson and acknowledged the above instrument to be his free act and deed.

Before me, Raymond E. Jensen
Justice of the Peace



Phillbrick

311

Warranty Deed.

FROM

ALZO F. PATTERSON, ET ALS.

TO

MAINE MEDICAL CENTER

DATED ....., 1953.

State of Maine.

Cumberland ss: Registry of Deeds.

Received JUN 12 1953, 19/

at 11 H., 5 M., A M., and

recorded in Book 2133, Page 311

ATTEST:

Robert L. Cross, REGISTER.

FROM THE OFFICE OF
RAYMOND E. JENSEN
415 Congress Street
Portland, Maine

No. 106. ROBERTS OFFICE SUPPLY COMPANY
Portland - Maine - Lewiston

11-5

Know All Men by These Presents.

(8)

That I, John T.Lennon of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar and other valuable considerations

paid by Maine Medical Center, a corporation organized and existing under the Laws of the State of Maine and located at said Portland

the receipt whereof I do hereby acknowledge, do hereby ~~give, grant, bargain, sell and convey~~ unto the said Maine Medical Center,its successors ~~heirs~~ and assigns forever, ~~a~~ certain lots or parcels of land with the buildings thereon situated in said Portland and bounded and described as follows:

First:

Beginning on the northerly side of Bramhall Street at the southwesterly corner of land now or formerly of Thomas H.Pratt,running thence westerly by said Bramhall Street fifty (50) feet to land now or formerly of Sophia M. Knight,and from these two points extending northerly towards Arsenal Street, holding tosaid width of fifty feet,and adjoining said Pratt premises on one side and said Knight premises on the other for a distance of sixty (60) feet to land now or formerly of Edward T.Burrowes.The said lot is the southerly portion of the premises conveyed to Albert B.Cole,Frank H.Cole and Warren W.Cole by Nettie E.Pierce by deed dated September 26,1911 and recorded in the Registry of Deeds for said County of Cumberland in Book 882,Page 188. Said premises are numbered thirty (30) on said Bramhall Street.

Second:

A certain lot of land with the buildings thereon on the southerly side of Arsenal Street in said Portland bounded and described as follows:

Commencing at a point on the Westerly line of land of Maude E.Pratt at a point sixty (60) feet northerly from the northerly side of Bramhall Street, thence westerly on a line parallel with and sixty (60) feet from said Bramhall Street, fifty (50) feet,more or less,to land of Sophia M.Knight;thence northerly from these two points keeping a width of fifty (50) feet and bounded on the West by Land of said Knight and on the East by land of said Pratt and George H.Fletcher,forty-nine (49) feet,more or less, to said Arsenal Street.

Being the same property conveyed to me by Harriet B.Foster by her warranty deed dated February 24,1945 and recorded in the Cumberland County Registry of Deeds in Book 1771 Page 131.

Also conveying all my,right, title and interest in and to Arsenal Street, recently abandoned by theCity of Portland.

To have and to hold the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors heirs and assigns, to its and their use and behoof forever.

And I do covenant with the said Grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises, that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will ~~Warrant and Defend~~ the same to the said Grantee, its ~~heirs~~ successors and assigns forever, against the lawful claims and demands of all persons.

~~In Witness Whereof~~ I the said John T.Lennon

and Ann C.Lennon

wife of the said John T.Lennon

joining in this deed as Grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises, have hereunto set our hand and seal this fifth day of May in the year of our Lord one thousand nine hundred and fifty three.

~~Signed, Sealed and Delivered in presence of~~

John J. Devine
to both

John T. Lennon
Ann C. Lennon

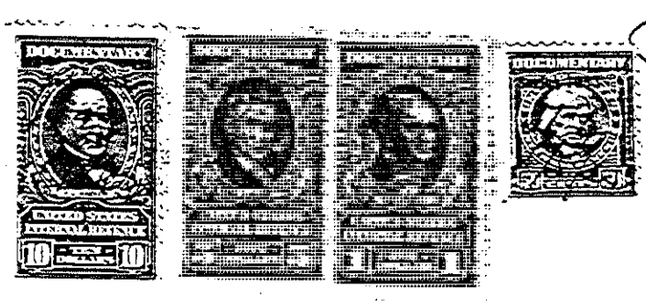
1650

~~State of Maine.~~ Cumberland ss. May 5, 19 53.

Personally appeared the above named John T.Lennon

and acknowledged the foregoing instrument to be his free act and deed.

Before me,
John J. Devine
Justice of the Peace
~~Notary Public~~



Phillbrook

269

Warranty Deed

FROM

John T.Lennon

TO

Maine Medical Center

Dated May 5th 19 53

State of Maine.
Cumberland Co. Registry of Deeds

Received MAY 5 1953 19/

at 2 H., 30 M., 0 M., and

recorded in Book 2127 Page 269

ATTEST: Robert W. Crockett Register

FROM THE OFFICE OF

Devine, Devine, Devine
102 Exchange St
Portland,Maine.

L. L. MARTIN, PORTLAND, ME.—OFFICE FURNITURE AND SUPPLIES
TYPEWRITERS, ADDING MACHINES, FILING CABINETS, SAFES, ETC.

MARTIN'S FORM NO. 1 — STANDARD REGISTRY FORM

9 3 3

(9)

(No. 106)

Know All Men by these Presents,

That I, HAZEL B. THERIO of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar and other valuable considerations

paid by MAINE MEDICAL CENTER, a corporation duly organized and existing under the Laws of the State of Maine and located at said Portland

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said MAINE MEDICAL CENTER, its

successors and Assigns forever,

the following described property:

A certain lot or parcel of land with the buildings thereon situated on the Westerly side of Bramhall Street in said Portland, being more particularly described in deed from Hazel E. Skillings to the Grantor, dated September 18, 1945 and recorded in Cumberland County Registry of Deeds in Book 1790, Page 500, in which deed said premises are described as follows:

A certain lot or parcel of land, with the buildings thereon situated in said City of Portland, on the Northwesterly side of Bramhall Street, bounded and described as follows: Beginning at the most easterly corner of land now or formerly of Sophia P. Jones; thence Northeasterly on said Bramhall Street fifty (50) feet to land now or formerly of one Raymond; thence Northwesterly by said Raymond land fifty-nine (59) feet; thence Southwesterly thirteen (13) feet two (2) inches, more or less, to a fence; thence Northwesterly by the line of the division fence three (3) feet two (2) inches; thence Southwesterly by said fence thirty-six (36) feet five (5) inches, more or less, to said Jones land; thence Southeasterly by said Jones land sixty-two (62) feet two (2) inches to the point begun at.

Also, all my right, title and interest in and to Arsenal Street recently abandoned by the City of Portland.

To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said MAINE MEDICAL CENTER, its successors

and Assigns, to its and their use and behoof forever.

And I do covenant with the said Grantee, its successors and Assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my Heirs, shall and will Warrant and Defend the same to the said Grantee, its successors

Heirs and Assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Hazel B. Therio,
being unmarried,

~~xxxxx~~ ~~xxxxxxxxxxxxxxx~~

~~joining in this deed as Grantor, and relinquishing and conveying~~
~~rights by descent and all other rights in the above~~
~~described premises~~, have hereunto set my hand and seal this
16th day of May in the year of our Lord
one thousand nine hundred and fifty-three.

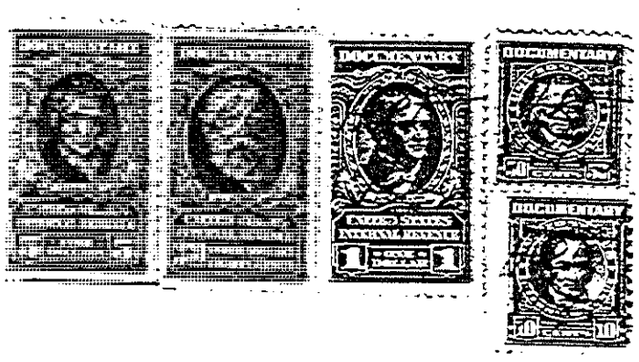
~~Signed, Sealed and Delivered~~
in presence of

Edward F. Sawyer — Hazel B. Therio

~~State of Maine.~~
Cumberland } ss. May 16, 1953.

Personally appeared the above named Hazel B. Therio
and acknowledged the above instrument to be her free act and
deed.

Before me, Edward F. Sawyer.
Justice of the Peace



Philbrick

443

Warranty Deed.

FROM

HAZEL B. THERIO

TO

MAINE MEDICAL CENTER

DATED May, 19 53.

State of Maine.

Cumberland ss: Registry of Deeds.

Received MAY 16 1953, 19 ,

at 10 H, 25 M., A M., and

recorded in Book 2127, Page 143.

ATTEST:

Robert V. Crommett, REGISTER.

FROM THE OFFICE OF

VERRILL DANA WALKER PHILBRICK

& WHITEHOUSE.

No. 100. ROBERTS OFFICE SUPPLY COMPANY
Portland - Maine - Lewiston

10-35

(No. 106)

Know All Men by these Presents,

That We, Albert N. Tardif and M. Louise Tardif, both of Portland, County of Cumberland, State of Maine

in consideration of one dollar ($1.00) and other valuable considerations

paid by Maine Medical Center, a Corporation established by law at said Portland

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center

its successors ~~Heirs~~ and Assigns forever,

the following described property:

A certain lot or parcel of land with the buildings thereon situated on the northerly side of Bramhall Street in said Portland which was conveyed to the grantors by Wilhelmina M. Mantine, by deed dated September 16, 1935 and recorded in Cumberland County Registry of Deeds in Book 1478, Page 294 and therein described as follows: Beginning on the northerly side of Bramhall Street at the easterly corner of land formerly of James Miller; thence northeasterly by Bramhall Street twenty-one and seven twentieths (21-7/20) feet to a stake; thence northwesterly about one hundred eleven (111) feet to a point in the southerly side of Arsenal Street; thence southwesterly by Arsenal Street twenty-two and three quarters (22-3/4) feet to said Miller's land; thence southeasterly by said Miller's land one hundred eleven and four tenths (111-4/10) feet to the point of beginning.

Also all our right title and interest in and to Arsenal Street recently abandoned by the City of Portland.

To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said Maine Medical Center, its successors

~~Heirs~~ and Assigns, to its and their use and behoof forever.

And we do covenant with the said Grantee, its ~~Heirs~~ successors and Assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and ~~our~~ Heirs, shall and will Warrant and Defend the same to the said Grantee, its successors

~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons.

In Witness Wherrof, We the said Albert N. Tardif

and M. Louise Tardif, the said Grantors, being Husband and Wife

~~and~~ ~~wife of the said~~

each joining in this deed as Grantors, and each relinquishing and conveying our respective rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this 11th day of June in the year of our Lord one thousand nine hundred and fifty-three.

~~Signed, Sealed and Delivered~~
~~in presence of~~

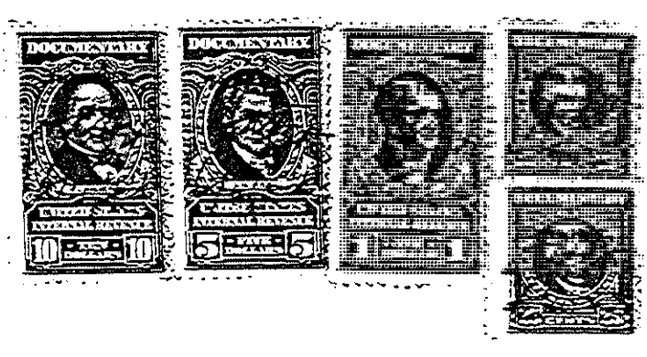
Edward F. Sawyer
to both

Albert N Tardif
M Louise Tardif

~~State of Maine.~~
Cumberland } ss. June 11, 1953.

Personally appeared the above named Albert N. Tardif and M. Louise Tardif and acknowledged the above instrument to be their free act and deed.

Before me, Edward F. Sawyer
Justice of the Peace



Philbrick

310

Warranty Deed.

FROM

ALBERT N. TARDIF, et al

TO

MAINE MEDICAL CENTER

DATED June, 1953.

State of Maine.
Cumberland ss: Registry of Deeds.

Received JUN 12 1953, 19 ,

at 11 H., 5 M., A M., and

recorded in Book 2133, Page 310

ATTEST:

Robert T. Crowell, REGISTER.

FROM THE OFFICE OF

Verrill Dana Walker Philbrick

& Whitehouse

No. 106. ROBERTS OFFICE SUPPLY COMPANY
Portland - Maine - Lewiston

11-5

(11)

No. 106

Know All Men by these Presents,

That I, CLARA G. READ, of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable considerations

paid by MAINE MEDICAL CENTER, a Maine corporation having a place of business in said Portland, in said County and State,

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center,

its Successors ~~Heirs~~ and Assigns forever,

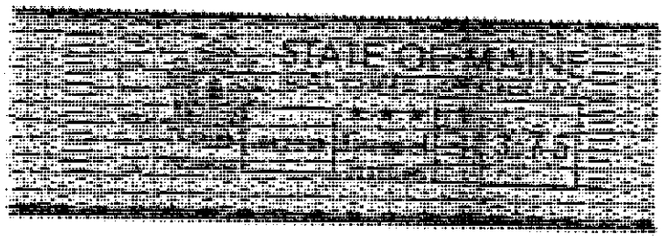
the following described property:

A certain lot or parcel of land, with the buildings thereon, situated on the southwesterly side of Charles Street in said Portland, bounded and described as follows:

Beginning on said southwesterly side of Charles Street at a point thirty (30) feet northwesterly by said Street from the northeasterly corner of land formerly of Charles A. Donnell; thence northwesterly by said Street thirty (30) feet; thence southwesterly parallel with the line of said Donnell land seventy-four and two-tenths (74.2) feet to land formerly known as the Arsenal property; thence southeasterly by said Arsenal lot thirty (30) feet; thence northeasterly parallel with said Donnell land seventy-four and two-tenths (74.2) feet to the point of beginning.

Being the same premises conveyed to this Grantor and Clarence D. Read, as joint tenants, by Grace R. Loomis by deed dated September 1, 1948 and recorded in Cumberland County Registry of Deeds in Book 1926, Page 336. The said Clarence D. Read having deceased and his estate is of record in the Registry of Probate for Cumberland County, Maine.

The Grantor herein shall have the right to occupy the premises hereby conveyed until September 15, 1969.



To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said Maine Medical Center, its Successors

~~Heirs~~ and Assigns, to them and their use and behoof forever.

And I do covenant with the said Grantee, its/ ~~Heirs~~ Successors and Assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my Heirs, shall and will Warrant and Defend the same to the said Grantee, its Successors ~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Clara G. Read, being a widow,

~~and~~ ~~wife of the said~~

~~joining in this deed as Grantor, and relinquishing and conveying~~

~~rights by descent and all other rights in the above~~

~~described premises,~~ have hereunto set my hand and seal this [illegible] day of July in the year of our Lord one thousand nine hundred and sixty-nine.

Signed, Sealed and Delivered
in presence of

[illegible] [illegible]

State of Maine,
CUMBERLAND } ss. July [illegible] 1969.

Personally appeared the above named

CLARA G. READ

and acknowledged the above instrument to be [illegible] free act and deed.

Before me, [illegible]

Justice of the Peace

JUL 23 1969
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 10 H 58 M.M. and recorded in
BOOK 3695 PAGE 34 Seward R. T[illegible] Register

Phillich/40

Warranty Deed.

FROM

CLARA G. READ

TO

MAINE MEDICAL CENTER

DATED July 22, 1969.

State of Maine,

..... ss: Registry of Deeds

Received JUL 2 6 1969, 19 ,

at ..... M., ... M., ... M., and

recorded in Book....., Page.....

ATTEST:

....., REGISTER.

FROM THE OFFICE OF

JOHN W. STURGIS
415 Congress Street
Portland, Maine

No. 106. ROBERTS OFFICE SUPPLY COMPANY
Portland, Maine

10.50

(12)

No. 106

Know All Men by these Presents,

That We, WILLIAM C. GOKEY and SUZANNE E. GOKEY, both of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar ($1.00) and other valuable considerations

paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of Maine and located at Portland, County of Cumberland and State of Maine

the receipt whereof we do hereby acknowledge, do hereby ~~give, grant, bargain, sell and convey~~, unto the said Maine Medical Center,

its successors ~~xxxxx~~ and Assigns forever,

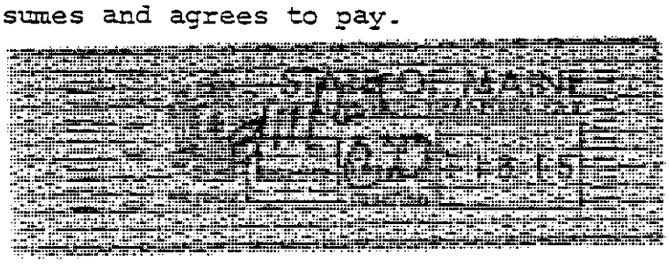
the following described property:

A certain lot or parcel of land with the buildings thereon situated on the southeasterly side of Ellsworth Street in said Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at the northeasterly corner of a lot of land on Bramhall's Hill which John B. Brown sold to one Tuttle; thence northeasterly on said Ellsworth Street forty (40) feet; thence southeasterly about seventy-four (74) feet to land formerly of Davis; thence southwesterly by said Davis's land to land formerly of said Tuttle forty (40) feet; thence northwesterly to said Ellsworth Street, the bounds begun at, seventy-four (74) feet.

Being the same premises conveyed to William C. Gokey and Suzanne E. Gokey by Thelma A. Barter, by deed dated June 19, 1968, recorded in Cumberland County Registry of Deeds in Book 3045, Page 187.

This conveyance is made subject to taxes for the year 1969 which the Grantee assumes and agrees to pay.



To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said Maine Medical Center, its successors

~~Heirs~~ and Assigns, to its and their use and behoof forever.

And we do covenant with the said Grantee, its successors ~~Heirs~~ and Assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our Heirs, shall and will Warrant and Defend the same to the said Grantee, its successors ~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, we the said William C. Gokey and Suzanne E. Gokey, being husband and wife

~~and wife of the said~~

~~joining in this deed as Grantor, and relinquishing and conveying all rights by descent and all other rights in the above described premises~~, have hereunto set our hands and seals this 11th day of August in the year of our Lord one thousand nine hundred and sixty-nine.

Signed, Sealed and Delivered in presence of

State of Maine, Cumberland } ss. August 11, 1969

Personally appeared the above named William C. Gokey and acknowledged the above instrument to be his free act and deed.

Before me,

Justice of the Peace

AUG 11 1969
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 2 E 24 M. and recorded in
BOOK 3197 PAGE 244 Register

Philbrick / EFD

Warranty Deed.

FROM

William C. Gokey et al

TO

Maine Medical Center

DATED August, 1969.

State of Maine,

..... on: Registry of Deeds

Received AUG 11 1969, 19 ,

at ..... H., ... M., ... M., and

recorded in Book....., Page.....

ATTEST:

....., REGISTER.

FROM THE OFFICE OF
Verrill Dana Philbrick Whitehouse
& Putnam
57 Exchange Street
Portland, Maine

No. 106. ROBERTS OFFICE SUPPLY COMPANY
Portland, Maine

2-28

(13)

(154)
EXECUTOR'S AND TRUSTEE'S DEED.
[WHEN THE WILL AUTHORIZES A SALE.]

927

Know all Men by these Presents,

That I, HELEN M. GRIFFIN

of Portland in the county of Cumberland

sole acting executor of the last will and testament

of Mary Davis late of Portland

deceased, testate, by virtue of the authority to me given by

the said Mary Davis in her last will and

testament, in my capacity of executor as afore-

said, and in consideration of One Dollar ($1.00) and other

valuable considerations

to me paid by MAINE MEDICAL CENTER, a corporation organized under the laws of Maine and situated in Portland

the receipt whereof is hereby ac-

knowledged, do hereby grant and convey unto the said Maine Medical Center, its successors

and assigns, the following described real estate, which was

the property of the said Mary Davis.

A certain lot or parcel of land with the buildings thereon situated in Portland on the northerly side of Brackett Street, bounded and described as follows:

Beginning at the intersection of the northerly side of Brackett Street with the westerly side of Russell Street; thence running northeasterly by Russell Street thirty-seven (37) feet, more or less, to land formerly owned by Hobart W. Richardson; thence running northwesterly by said Richardson land seventy-four (74) feet, more or less, to land formerly owned or occupied by W. S. Dunn; thence southwesterly by the line of said Dunn's land forty-one (41) feet, more or less, to a lane; thence southeasterly by said lane forty-one (41) feet, more or less, to Brackett Street; thence easterly by Brackett Street thirty-seven (37) feet, more or less, to the point of beginning.

Being the same premises conveyed to Mary Davis by Harry E. Davis by deed dated March 18, 1915, recorded in Cumberland County Registry of Deeds in Book 945, Page 109.

Reference is made to Will of said Mary Davis, abstract of which is recorded in said Registry of Deeds in Book 3025, Page 28.

928

To have and to hold the above-granted premises unto the said Maine Medical Center, its successors ~~and~~ ~~assigns~~ and assigns forever. And I the said Helen M. Griffin, in my said capacity, do hereby covenant to and with the said Maine Medical Center, its successors ~~and~~ and assigns, that I am the lawful executor of the last will and testament of the said Mary Davis ; that I have power under said will to sell as aforesaid; and that in making this conveyance, I have in all respects, acted in pursuance of the authority granted in and by the said last will and testament.




In Witness Whereof, I the said Helen M. Griffin

in my said capacity of executor

as aforesaid have hereunto set my hand and seal .

this 31st day of March in the year of our

Lord one thousand nine hundred and sixty-six.

Signed, Sealed and Delivered
in presence of

Helen M Griffin

March 31 1966.

State of Maine.
Cumberland } ss.

Then personally appeared the above named Helen M. Griffin

and acknowledged the above instrument to be her free act and deed

in her said capacity.

Before me,

Justice of the Peace.

MAR 31 1966
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 3 H 55 M P.M. and recorded in
BOOK 2951 PAGE 927 Register

Executor's and Trustee's Deed.

(WHEN THE WILL AUTHORIZES A SALE.)

Helen M. Griffin

TO

Maine Medical Center

Dated, ... 19

..... ss. **Registry of Deeds.**

Received 19

MAR 31 1966

at ..... H., ... M., ... M., and

recorded in Book ..... Page .....

Attest: ..... Register.

FROM THE OFFICE OF

Verrill Dana Walker Philbrick
& Whitehouse
57 Exchange Street
Portland, Maine

LORING, SHORT & HARMON, LAW STATIONERS
PORTLAND, MAINE

3355

(15)

KNOW ALL MEN BY THESE PRESENTS

THAT OLD COLONY TRUST COMPANY a Corporation located in Boston, County of Suffolk and Commonwealth of Massachusetts, sole surviving Trustee under a Trust Agreement created by ALICE A. BURKITT late of Portland and dated March 30, 1961 by virtue of the authority to it given by said Trust Agreement in its capacity of Trustee as aforesaid, and in consideration of One Dollar ($1.00) and other valuable considerations to it paid by MAINE MEDICAL CENTER of Portland, Maine, the receipt whereof is hereby acknowledged, does hereby sell and convey unto the said Maine Medical Center its successors and assigns forever, the following described real estate, which was the property of Alice A. Burkitt late of Portland, situated in said Portland, Maine and bounded as follows:

a certain lot or parcel of land with the buildings thereon, situated in said Portland, bounded and described as follows: Beginning at a point on the easterly side of Western Promenade, which point is eighty-five (85) feet from the intersection of the northeasterly side line of said Promenade with the northwesterly side line of Bramhall Street; thence northerly by the line of said Promenade seventy-seven and five tenths (77.5) feet, more or less, to Arsenal Street; thence northeasterly by said Arsenal Street seventy-four and one tenths (74.1) feet, more or less, to land now or formerly of William J. Miller et al; thence southeasterly at right angles to Arsenal Street by said Miller land fifty-five and five tenths (55.5) feet, more or less, to land formerly of Hiram Knowlton; thence southwesterly parallel with said Arsenal Street one hundred and twenty-seven (127) feet, more or less, to the Western Promenade and point of beginning, containing fifty-six hundred (5600) square feet more or less.

Also another parcel of land adjoining the above described lot, and bounded and described as follows: Commencing at a point on the northwesterly side of Bramhall Street, which point is the northeasterly corner of land of Frederick C. Hussey et al, and ninety-eight and two tenths (98.2) feet, more or less, from the intersection of said northwesterly side line of Bramhall Street with the easterly side line of the Western Promenade; thence northeasterly on said Bramhall Street thirty-three and five tenths (33.5) feet to a point and land formerly of Hiram Knowlton, and from these two points extending northwesterly keeping a width of thirty-three and five

tenths (33.5) feet a distance of sixty (60) feet to the first parcel herein conveyed, containing two thousand and ten (2010) square feet.

Meaning and intending to convey and hereby conveying the real estate acquired by Alice A. Burkitt by Warranty Deed of Good Will Home Association dated December 11, 1930 recorded in the Cumberland County Registry of Deeds Book 1361, page 373; said real estate having been devised to the Grantor as Trustee by the Will of Alice A. Burkitt duly probated in the Cumberland County Probate Court.

TO HAVE AND TO HOLD the above-granted premises unto the said Maine Medical Center its successors and assigns forever. And the said Old Colony Trust Company in its said capacity does hereby covenant to and with the said Maine Medical Center its successors and assigns that it is the sole surviving Trustee under said Trust Agreement; that it has power under said Trust Agreement to sell as aforesaid; and that in making this conveyance it has in all respects acted in pursuance of the authority granted in and by said Trust Agreement.

IN WITNESS WHEREOF, the said Old Colony Trust Company in its said capacity as Trustee as aforesaid has caused this instrument to be signed in its corporate name and sealed with its corporate seal by S. Vincent its ~~Trust Officer~~ Vice President thereunto duly authorized this 4th day of February 1969.

Witness:

OLD COLONY TRUST COMPANY

By _____
Its ~~Trust Officer~~ Vice President

COMMONWEALTH OF MASSACHUSETTS
SUFFOLK, SS.

February 4, 1969.

Then personally appeared the above-named S. Vincent who made oath that the foregoing instrument was his free act and deed and the free act and deed of the Grantor corporation in its said capacity as Trustee as aforesaid.

Before me,

_____
Notary Public

Mary F. Archoska
NOTARY PUBLIC
My commission expires May 23, 1971

Section 5
Public or Private Rights-of-Way

5.A. Public or Private Rights-of-Way

The existing site has four primary accesses; one on Gilman Street for the existing employee garage, one on Congress for the visitor parking garage, one onto Crescent Street for the visitor parking garage, and a pick-up and drop-off driveway off Bramhall Street. The site is proposed to have one new access on Congress Street for the proposed visitor pick-up and drop-off driveway and visitor parking garage connection. The East Tower will continue to be accessed via the existing drop-off and pick-up driveway off Bramhall Street, and the two existing visitor parking garage accesses will remain. The existing Gilman Street employee garage access will be eliminated.

Section 6
Schedule

6.A. Schedule

The proposed project is anticipated to be completed and occupied by 2023.

Relationships.
Responsiveness.
Results.









Revised Section #7 Traffic Impact Study

Bramhall Street - 22;
MMC Congress Street Building
Portland, Maine

PREPARED FOR:
Maine Medical Center
22 Bramhall Street
Portland, ME 04102

November 2018

SUBMITTED BY:
Gorrill Palmer
707 Sable Oaks Drive
Suite 30
So. Portland, ME 04106
207.772.2515

Revised - Traffic Impact Study
Bramhall St. – 22; MMC Congress St. Building
Portland, Maine
November 2018

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Attachment 7A
Site Location Map
Turning Movement Diagrams

Attachment 7B
Trip Generation Calculations
May 2013 Traffic Impact Study

Attachment 7C
Capacity and Queue Analysis Results
DD Mitigation

Attachment 7D
Pedestrian and Bicycle Collision Locations
Left Turn Lane Warrants

I. Introduction

A Scoping Meeting for this project was held on October 23, 2018 that reviewed Sections 1-6 of the Traffic Movement Permit (TMP) application. This traffic impact study is Section 7 of that application, and examines the potential traffic impact of phase three (3) of the proposed Maine Medical Center expansion in Portland, Maine. The site of the expansion is located at the site of the existing Gilman Garage in the southeast corner of the Congress Street / Gilman Street intersection. The site is identified on City Tax Map 53, Lot D007, and City Tax Map 65 Lots H001, H002, H005, H008, and H009. A proposed site plan is provided with the site plan application under separate cover. The attached Figure 1 in Attachment 7A shows the location of the site.

The existing site is the same location as the Gilman parking garage for the employees of Maine Medical Center. The proposed project consists of razing the existing employee garage and constructing additional hospital space, including new operating rooms and patient rooms, although the total number of beds will remain the same, since the new patient rooms are intended to decompress the existing hospital. A new drop off and pick up loop, with access to the visitor garage is proposed on Congress Street, to the west of the existing visitor garage. Parking will be provided for employees at the recently approved St. John Street employee parking garage and for the patients and visitors in the existing and recently expanded visitor parking garage. The expansion is proposed to be a total of 265,000 sf and is also anticipated to add 200 employees by 2023, the opening year of the project. After opening, MMC is anticipated to add an additional 124 employees, for a total increase of 324 employees.

II. Existing Traffic Volumes

Turning movement counts were completed by Accurate Counts at the following intersections from 5:00AM to 9:00AM and 2:00PM to 8:00 PM on the specified dates:

- St John Street / Valley Street: November 8, 2017
- Valley Street / Commercial Street: November 2, 2017
- Congress Street / St. John Street: November 2, 2017
- St John Street / Park Avenue: November 8, 2017

Accurate Counts also completed turning movement counts at the intersection of Valley Street with Congress Street on June 26, 2018 from 6:00AM – 6:00PM.

Turning movement counts were also completed by Gorrill Palmer at the following intersections:

- St. John Street / D Street: May 30, 2018, 6:00AM – 9:00AM and 3:00PM – 6:00PM
- Congress Street / Bramhall Street: August 23, 2018, 6:00AM – 9:00AM and 3:00PM – 6:00PM
- Congress Street / Visitor Garage: August 29, 2018, 6:00AM – 9:15AM and 3:00PM – 6:00PM
- Visitor Garage / Crescent Street: August 29, 2018, 6:00AM – 9:00 AM and 3:00PM – 6:00PM

In addition, turning movement counts were completed by Gorrill Palmer at the intersection of St. John Street with the Margarita's Driveway on May 17, 18, and 19, 2017 from 6:00AM to 8:00AM, 7:45AM to 9:00AM, 5:00PM to 8:00PM, and 3:00PM to 5:00PM. Those volumes were used as the base raw volumes for St. John Street and for Margaritas during the peak hours of the generator. This evaluation has focused on the peak hour of the adjacent street, which occurs at 7:30AM to 8:30AM and 4:15PM to 5:15PM at the intersection of Congress Street with Bramhall Street.

The results of all counts for the peak hour of the adjacent street are shown on the attached Figure 2 in Attachment 7A.

III. Other Developments in the Vicinity of the Site

Approved projects that are not yet opened as well as projects for which applications have been filed are required to be included in the predevelopment volumes for this project. Based on conversations with City Staff, traffic from the proposed Mercy Hospital expansion, the proposed Dunkin' Donuts on St. John Street, and the Thompson's Point development should be included in the background traffic. It should be noted that although portions of the Thompson's Point development have been constructed, the full build out traffic volumes from the August 2011 Traffic Impact Study have been utilized to be conservative. The traffic from this project that is forecast to impact the Maine Medical Center Expansion study area is shown on the attached Figure 4.

IV. Predevelopment Traffic Volumes

Traffic volumes that are not collected during peak summer months are typically seasonally adjusted to estimate traffic volumes that may be experienced during the peak summer months. Since the traffic counts were not collected during the peak summer months, the raw volumes shown on Figure 2 have been seasonally adjusted based on the weekly group mean factors published by MaineDOT. The following summarizes the adjustment at each intersection:

- Valley Street / Commercial Street: 8.3%
- St. John Street / Valley Street: 8.3%
- D Street / St. John Street: 2.4%
- Margaritas / St. John Street: 3.6%
- Congress Street / St. John Street: 8.3%
- Park Avenue / St. John Street: 8.3%
- Valley Street / Congress Street: 2.4%
- Gilman Street / Congress Street: 15.5% (Congress through traffic only)
- Bramhall Street / Congress Street: 0.0%

In addition to the seasonal adjustment, the adjacent roadway volumes were also increased by an annual growth rate to forecast the traffic volume that may be experienced during the build out year of the project. An annual growth rate of 0.5% per year (approved by the City and consistent with other studies in the area) has been applied to the seasonally adjusted volumes to yield the 2023 Adjusted Volumes shown on the attached Figure 3. The 2023 Adjusted Volumes have been combined with the Other Development Volumes to yield the 2023 Predevelopment traffic volumes shown on the attached Figure 5. It should be noted that the employee growth rate in the IDP is forecast to be approximately 0.63% per year, which is very similar to the growth rate approved by the City for overall on-street traffic and used on other studies in the area.

It should be noted that the traffic volumes into and out of parking areas has not been adjusted because significant seasonal or annual fluctuation is not anticipated.

V. Trip Generation

The trip generation for the Phase 3 Expansion was calculated using the Institute of Transportation Engineers' (ITE) publication, *Trip Generation*, Seventh Edition, Land Use Code (LUC) 610 – Hospital. The Tenth Edition is available, but has not yet been accepted by the MaineDOT. The expansion is proposed to be a total of 265,000 sf and is anticipated to add 200 employees by 2023 and an additional 124 employees after opening for a total of 324 employees. As approved at the October 13, 2017 Pre-Scoping meeting, the trip generation for the expansion has been based on the number of employees, students, and physicians. The following is a summary of the trip generation for the expansion based on an increase of 324 employees:

- AM Peak Hour Adjacent Street: 110 trip ends
- PM Peak Hour Adjacent Street: 107 trip ends
- AM Peak Hour of Generator: 126 trip ends
- PM Peak Hour of Generator: 152 trip ends
- Saturday Peak Hour: 172 trip ends

A trip end is defined as a trip into or out of the site; thus, a round trip is equal to two trip ends. Since the forecast traffic exceeds 99 trip ends during a peak hour, a Traffic Movement Permit is required. The City of Portland has delegated review authority, so the application can be administered by the City. A copy of the trip generation calculations are included as an attachment to this section.

Based on ITE's *Trip Generation*, the following trip distribution is anticipated:

- AM Peak Hour Adjacent Street: 88 in / 22 out
- PM Peak Hour Adjacent Street: 37 in / 70 out
- AM Peak Hour of Generator: 82 in / 44 out
- PM Peak Hour of Generator: 61 in / 91 out
- Saturday Peak Hour: 95 in / 77 out

VI. Trip Composition and Assignment

GP has assumed that all trips are primary in nature and made for the sole purpose of going to and from the site. The forecast trip generation is anticipated to be comprised of patients/visitors and employees. The portion of the trip generation that is forecast to be due to patients/visitors has been based on information provided by MMC in an email dated August 8, 2018.

Table 2.4 on page 41 of the IDP shows the forecast campus weekday volumes for 2026. The patient and visitor volumes from 2026 have been proportionally reduced based on the growth rates to estimate the number of patients and visitors in 2023. Based on the 2026 patient and visitor volumes, an increase of approximately 50 patients and visitors in an average weekday is anticipated by 2023 due to the proposed expansion. The distribution of the patient/visitors has been based on the following assumptions:

- 20% of daily trips occur during the peak hours
- 80% entering during the AM peak hour
- 80% exiting during the PM peak hour

Based on these assumptions, the following trip composition is forecast for the peak hours of the adjacent street:

- AM Peak Hour Adjacent Street (assumed 7:30AM – 8:30AM):
    - Patients/Visitors: 14 trip ends (11 in / 3 out)
    - Employees: 96 trip ends (77 in / 19 out)

- PM Peak Hour Adjacent Street (assumed 4:15PM – 5:15PM):
    - Patients/Visitors: 14 trip ends (3 in / 11 out)
    - Employees: 93 trip ends (34 in / 59 out)

It should be noted that although the patient/visitor trip generation appears to be low, it is a reasonable level of trip generation for the expansion since the expansion is proposed to decompress the existing hospital, and not significantly increase the number of patients at the hospital.

The patient/visitor trip assignment has been based on the proposed driveway locations, information from MMC in an email dated August 8, 2018, and the existing traffic patterns and is shown on Figure 6 in Attachment 7A. The trip assignment for the employees was initially based on the VHB Travelshed for employees, and adjusted per City comments. The trip assignments are shown on Figure 7 in Attachment 7A.

VII. Previously Approved Expansions

Although the currently proposed expansion is for 324 employees, there were previously approved expansions that did not trigger a Traffic Movement Permit. It is required that any development on a property that was completed within the last 10 years be included in the permitted trip generation. Based on information from the City of Portland, there were two previously approved, constructed, and occupied expansions. Based on a review of a traffic impact study completed for the second expansion, dated May 2013, the trip generation for the combined expansions was forecast to be the following:

- AM Peak Hour of the Generator: 77 trip ends
- PM Peak Hour of the Generator: 84 trip ends

It should be noted that the May 2013 traffic impact study included only the peak hours of the generator. Since the expansion projects that were forecast to generate this traffic have been completed and occupied, this traffic is assumed to be included in the existing traffic on the adjacent roadway network. However, it must be included when determining the study area for the currently proposed expansion. The forecast trip generation for the currently proposed expansion has been combined with the previous expansions to yield the following trip generation:

- AM Peak Hour: 187 trip ends
- PM Peak Hour: 191 trip ends

The proposed expansion focuses on the peak hour of the adjacent street traffic, since this is expected to be the most congested time period on the adjacent roadway network. Since the only available information for the previous studies is the peak hour of the generator, those volumes were added to the proposed traffic for the purposes of determining the overall study area. This is a conservative approach, since it overlaps the peak of the hospital that includes primarily employees and occurs off hours, with the peak of the adjacent street traffic.

The distribution between patients and visitors for the previous expansion is assumed to be the same as the currently proposed expansion. The attached Figure 17 shows the estimated trip assignment for the previous expansion and the currently proposed expansion.

VIII. Congress Street Pick-Up / Drop-Off

As part of the proposed expansion, a new patient drop-off / pick-up loop is proposed on Congress Street to the west of the existing visitor garage. The loop is proposed to have a connection to the Visitor Garage, to allow people to drop a patient off then park or pick up a patient after exiting the Visitor Garage. This prevents traffic from recirculating on Congress Street between the loop and the parking garage. There is space for approximately 11 vehicles before backing onto Congress Street, which is anticipated to be adequate based on observations completed at the existing Bramhall Street loop. It is anticipated that the new Congress Street pick-up / drop-off will draw existing traffic from the Bramhall Street drop-off loop. To estimate the traffic that may use the Congress drop-off instead of the Bramhall drop-off, counts and observations were completed by Gorrill Palmer at the Bramhall drop-off on August 28-30, 2018 from 7:00AM – 10:00AM and 3:00PM – 6:00PM. On August 29, 2018 an additional two hours, from 10:00AM – 12:00PM, was also collected. The counts were separated into six types of trips through the loop; pick-up, drop-off, pass-through, parked, valet parking (park), and valet parking (return). Using the counts collected, traffic was reassigned based on existing traffic patterns and the following assumptions:

- Valet parking and return will remain at the Bramhall drop off
- 75% of pick-ups and drop-offs will use the Congress drop off (from MMC in an email dated August 8, 2018)
- 25% of pick-ups and drop-offs will remain at the Bramhall drop off (from MMC in an email dated August 8, 2018)

The reassigned traffic volumes are shown on Figure 8 in Attachment 7A. It should be noted that the initial assumption was that valet parking would remain only at the Bramhall drop-off. Since that time, it has been identified that there will be valet parking at the

Congress Street drop-off as well as the Bramhall drop-off. This may increase traffic volumes using the Congress drop-off and right turning traffic from Congress to Bramhall. The increase in traffic due to valet parking is not forecast to significantly impact the results of this evaluation.

IX. Phase 3 Net Impact

The Phase 3 patient/visitor trip assignment on Figure 6, the Phase 3 employee trip assignment on Figure 7, and the reassigned drop-off traffic on Figure 8 were combined to yield the Phase 3 Net Impact shown on Figure 9 in Attachment 7A.

X. Existing Employee Garage

The proposed Phase 3 expansion will be located at the site of the existing employee garage in the southeast corner of the Congress Street / Gilman Street intersection. The existing employee garage is proposed to be razed and MMC will be constructing a new 2400 space employee parking garage on St. John Street. As a result, the existing employee traffic volumes will be relocated to St. John Street. The existing employee garage traffic volumes have been estimated based on the turning movement counts completed at the garage access on Gilman Street on November 2, 2017, the previously approved proposed employee garage assignment, and existing traffic patterns. Figure 10 in Attachment 7A shows the existing employee garage traffic to be removed from the adjacent roadway network.

XI. Proposed Employee Garage

MMC will construct an approximately 2,400 space employee parking garage with an adjacent surface lot with approximately 50 spaces on St. John Street. The proposed garage and adjacent surface lot are anticipated to initially accommodate the following:

- Gilman Garage: 1,274 spaces
- Sportsman Lot: 60 spaces
- 222 St. John Street Lot: 283 spaces
- Gateway Garage: 100 spaces
- Classic Lot: 97 spaces
- 321 Brackett Street Lot: 9 spaces
- MMC Employee On-Street Parking: 200 spaces (estimated)

Total Parking Spaces = 2,023

The 200 on-street parking spaces are an approximate number of spaces intended to include vehicles that may currently park on neighborhood streets. It should be noted that in the garage and surface lot 50 spaces are proposed to be reserved for the Eagles and approximately 150 are reserved for 222 St. John Street. The 50 parking spaces reserved for the Eagles are not expected to occur on a regular and frequent basis. Additionally, the Eagles and 222 St. John Street peaks are not expected to coincide with the peaks of MMC.

The Institutional Development Plan (IDP) identifies a current total of 2,027 employee parking spaces both on and off campus. The existing employee spaces that are not included in the garage spaces identified above are located in the 7 Bramhall Street lot (26 spaces). This lot is proposed to remain where it is because it serves specific programs at that location.

Existing Parking Area Traffic Volumes

Traffic counts were completed at the existing Gilman Garage access as follows:

- Accurate Counts - November 2, 2017 from 5:00AM to 9:00PM (16 hours) – The counts indicate that the peak hours of traffic entering and exiting the garage occurred from 6:45AM to 7:45AM with 448 trip ends, and 6:00PM to 7:00PM with 326 trip ends.
- GP – January 18, 2018 from 6:30AM to 8:00AM and 5:45PM to 7:15PM - The times were chosen based on the peak hours determined in the November 2, 2017 counts. The counts completed by GP confirmed the original findings from the November 2, 2017 counts.

Traffic counts were also completed at the existing 222 St. John Street surface parking as follows:

- GP - January 18, 2018 from 6:15AM to 7:45AM and from 3:30PM to 5:00PM
- GP - January 23, 2018 from 5:45PM to 7:15PM

The 222 St. John Street parking lot peak hours occurred from 6:15AM to 7:15AM and 3:30PM to 4:30PM. The entering and exiting traffic for each 15 minute period at the 222 St. John Street is shown on the attached "St. John Street Parking Garage Trip Generation" table.

The Gilman Employee Parking Garage and 222 St. John Street surface lot represent approximately 85% of the MMC employee spaces anticipated to be accommodated by the proposed St. John Street garage. As such, it is anticipated that when combined they will represent the majority of the traffic patterns that can be expected at the new garage. To

represent the traffic patterns of the remaining 15% of the satellite lots as well as the on-street parking spaces, the traffic patterns were assumed to be similar to the 222 St. John Street satellite lot. The trip generation for each 15 minute period for each satellite parking area has been estimated based on the trip generation at the 222 St. John Street parking lot and is shown on the attached "St. John Street Parking Garage Trip Generation" table.

Reassigned Parking Area Traffic Volumes

Since the employees that currently park in the Gilman garage will be shifted to the new garage, they will have to take a shuttle in the future rather than have direct access to the hospital as they do currently. Because of this shift, we would expect those employees to arrive approximately 15 minutes earlier than they typically would and that they would end up leaving the new garage approximately 15 minutes later. Therefore, the counted volumes for the Gilman Garage were adjusted by 15 minutes to estimate the traffic that would be experienced when the spaces are relocated to 222 St. John Street. The adjusted Gilman Garage volumes are shown on the attached "St. John Street Parking Garage Trip Generation" table.

The trip generation for the proposed St. John Street garage is based on adding the existing or estimated trip generation of each 15 minute period for each parking location to identify the overall AM & PM peak hours. The AM peak hour of the proposed garage is estimated to occur from 6:00AM to 7:00AM with and the PM peak hour of the garage is estimated to occur 4:15PM to 5:15PM. The peak hours of the garage were evaluated in the St. John Street Garage Memorandum dated June 19, 2018, completed by Gorrill Palmer. This evaluation focuses on the peak hours of the adjacent street which occur from 7:30AM to 8:30AM and 4:15PM to 5:15PM. It should be noted that the PM peak hour of the adjacent street occurs at the same time as the PM peak hour of the proposed garage. The trip generation for the reassigned 2,023 spaces is estimated to be **443 trip ends** during the AM peak hour of the adjacent street and **474 trip ends** during the PM peak hour of the adjacent street. Detailed data is shown on the attached spreadsheet.

Trip Distribution and Assignment

The garage is proposed to be accessed via a full movement driveway directly onto St. John Street as well as indirectly via the Margarita's driveway. During peak hours of the garage, the garage will be set up such that the ground level and first deck will be accessed via the Margarita's driveway and decks 2-8 will be accessed directly via the St. John Street access. All of the 222 St. John Street employees, the 50 Eagles spaces, and some of the MMC Campus employees will use the ground level and first deck parking spaces with decks 2 – 8 used by MMC Campus employees only. It should be noted that at the time this study was prepared, it was estimated that of the approximately All employee shuttles throughout the day (enter and exit) will access the garage via the Margarita's access.

Unused shuttles during non-peak times of the day are expected to be parked on the ground level.

The trip distribution (enter vs. exit) for the proposed St. John Street garage has been based on the counts completed at the existing 222 St. John Street surface lot and the Gilman Garage. Based on the counts, the following trip distribution is anticipated for the proposed 222 St. John Street garage:

- AM Peak Hour: 98% entering, 2% exiting
- PM Peak Hour: 14% entering, 86% exiting

The regional trip assignment has been based primarily on the VHB travelshed completed for the IDP and revised slightly per comments received from the City. For localized assignment, it is based on GP's review of the area as well as numerous discussions with the City of Portland staff and traffic consultant. The trip assignment is shown on the attached Figure 11 in Attachment 7A.

Proposed Parking Garage Trip Generation – Adjacent Street Peak Hour

The proposed St. John Street garage was evaluated for full capacity in a memorandum dated June 19, 2018. To ensure that the proposed garage can accommodate the proposed expansion, the total trip generation for the full capacity garage has been compared to the trip generation for the reassigned existing spaces. The difference between the reassigned existing spaces and the full capacity garage trip generation has been compared to the proposed expansion employee trip generation to determine if the proposed garage can accommodate the proposed expansion.

The total trip generation for the proposed St. John Street garage is based on adding the existing or estimated trip generation of each 15 minute period for each parking location to identify the overall AM & PM peak hours. Then, a ratio of the proposed number of parking spaces (2,450) to the existing combined number of parking spaces to forecast the trip generation for the proposed garage.

Based on the combined volumes for the parking areas and the proportional increase in number of parking spaces, the trip generation of the proposed garage during the peak hours of the adjacent street is forecast to be **537 trip ends** during the AM peak hour and **574 trip ends** during the PM peak hour.

The MMC employee's full garage is 94 trip ends greater than the existing reassigned volumes during the AM peak hour of the adjacent street and 100 trip ends greater than the reassigned volumes during the PM peak hour of the adjacent street. The proposed garage was previously evaluated for full capacity and was forecast to operate at acceptable levels of service. The ITE forecast trip generation for the AM and PM peak hours of the

adjacent street is forecast to be 68 trip ends and 66 trip ends respectively, which is less than the increase from the existing to full build out of the garage. Since the garage is forecast to operate at acceptable levels of service with more trip generation, the garage can accommodate the increase of 200 employees and students.

XII. Shuttle Assignment

MMC will be upgrading their current shuttle service to accommodate the new garage. In addition to employee traffic, shuttles will be used to transport employees between the parking garage and the hospital. There are proposed to be 13 shuttles during the peak hours, each with an approximate 15 minute headway. Based on this information, one shuttle can make approximately four trips to and from the proposed garage during a one hour period. With 13 shuttles, approximately 52 round (52 enter and 52 exit) trips are anticipated at the site during the peak hour. As identified previously, all entering and exiting shuttles will use the Margarita's access. These 104 trips have been added to the employee trips. The shuttle assignment has been based on the shuttle routes provided by MMC. At this time, seven of the shuttles are proposed to use the Congress Street drop off area on Gilman Street and six shuttles are proposed to use the Bramhall Street drop off. It has been assumed that the shuttles will turn right out of the Margarita's access with the Gilman Drop off shuttles entering taking a right in and the Bramhall shuttles entering taking a left in. The shuttle assignment is shown on Figure 12 in Attachment 7A.

XIII. 222 St. John Street MMC Traffic

MMC currently utilizes a satellite parking lot at 222 St. John Street for employees. This traffic currently uses the Margarita's access and will be relocated to the proposed parking garage and is included in the proposed parking garage trip generation. The existing estimated 222 St. John Street MMC traffic is shown on Figure 13 in Attachment 7A.

XIV. 222 St. John Street Cut-Through (Non-MMC Traffic)

The existing turning movement counts indicate that some traffic uses the existing Union Station access from Congress Street to the site. For the purposes of this assessment, to be conservative, it has been assumed that this cut-through will not be available and that traffic has been reassigned to the adjacent street. The attached Figure 14 shows the reassignment of the cut-through traffic (not including MMC traffic).

XV. Proposed Garage Net Impact

The net impact of the proposed St. John Street garage has been calculated by combining the Proposed Garage Reassignment on Figure 11 with the Shuttle Assignment on Figure 12 and the 222 St. John Street Cut-Through traffic on Figure 14, then subtracting the existing Gilman garage traffic on Figure 10 and the existing 222 St. John Street MMC traffic on Figure 13. This yields the Proposed Garage Net Impact traffic volumes on Figure 15 included in Attachment 7A.

XVI. Postdevelopment Traffic Volumes

The predevelopment traffic volumes shown in Figure 5 have been combined with the Phase 3 Net Impact on Figure 9 and the Proposed Employee Garage Net Impact on Figure 15 to yield the 2023 Postdevelopment volumes shown on the attached Figure 16 in Attachment 7A.

XVII. Capacity Analysis

In evaluating the time period for analysis, GP reviewed the traffic volumes during both time periods; adjacent street traffic and generator. The following table compares the total entering volumes at the key intersection of St. John Street with Congress Street during both the peak hour of adjacent street traffic and the peak hour of MMC. The traffic volumes for the adjacent street traffic are based on the 2023 Postdevelopment volumes from the TIS for Phase 3. The traffic volumes for the peak hour of MMC traffic generation are based on the 2022 Postdevelopment traffic volumes from the memo dated June 19, 2018 for the proposed St. John Street parking garage (Phase 2) that have been adjusted to the Phase 3 build out year of 2023.

Traffic Volume Comparison

Intersection	Adjacent Street		Peak Hour MMC	
	AM	PM	AM	PM
St. John / Congress	2,271	2,413	1,795	2,499

As shown in the table, the AM peak hour of the adjacent street traffic volumes (approximately 7:30-8:30 AM) are higher than the AM peak hour of the generator (approximately 6:00-7:00 AM). The PM peak hours are similar, since the PM peak hour of the generator and PM peak hour of the adjacent street occur at approximately the same time for this intersection (start time between 4:00 and 4:30 PM). Since the AM traffic is higher during the adjacent street time period and the PM traffic is approximately equal, to be conservative, the adjacent street traffic volumes were used for analysis.

GP completed capacity analyses for the intersections discussed above using the Synchro/SimTraffic computer analysis software (Version 10). Level of service rankings are similar to the academic ranking system where an 'A' is good with little control delay and an 'F' represents poor conditions. At an unsignalized intersection, if the level of service falls below a 'D', an evaluation should be made to determine if mitigation is warranted. The following tables summarize the relationship between control delay per vehicle and level of service:

Level of Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (s)
A	Less than 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	Greater than 80.0

Level of Service Criteria for Unsignalized Intersections

Level of Service	Control Delay per Vehicle (s)
A	Less than 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	Greater than 50.0

The analysis has been completed assuming that the signal at the intersection of Valley Street with Congress is removed and will be unsignalized (based on a study completed by Sebago Technics, Inc.). This change is supported by the City and MaineDOT. Additionally, the intersection of St. John Street with the proposed Garage access is unsignalized in the predevelopment conditions and signalized in the postdevelopment conditions. The predevelopment conditions include timing and phasing that was provided by the City. The postdevelopment has been evaluated based on optimized signal timing. This includes converting the intersection of St. John Street / Congress Street from exclusive pedestrian phasing to concurrent pedestrian phasing. GP recommends that timing of signals at the study area intersections be field adjusted after the hospital expansion is operational. The following table summarizes the capacity analysis results. The detailed analyses are included in Attachment 7C.

Level of Service Summary

Approach	Level of Service			
	AM Pre	AM Post	PM Pre	PM Post
Park / St John (S)				
Park WB	C	C	D	D
St. John NB	C	B	D	C
St. John SB	E	C	D	C
Overall	**D**	**C**	**D**	**C**
Congress / St John (S)				
Congress EB	B	C	B	C
Congress WB	B	B	B	B
St. John NB	C	C	C	C
St. John SB	C	C	C	C
Overall	**B**	**C**	**B**	**C**
Margarita's / St. John (U)				
Margarita's EB	A	A	A	A
St. John NB	A	A	A	A
St. John SB	A	A	A	A
Garage / D / St. John (U/S)				
Garage EB	A	B	A	B
D WB	A	A	A	A
St. John NB	A	A	A	A
St. John SB	A	A	A	B
Overall	**N/A**	**A**	**N/A**	**B**
Valley / St. John (S)				
St. John EB	B	B	B	B
St. John WB	B	B	B	B
Valley NB	B	B	B	B
Valley SB	B	B	B	B
Overall	**B**	**B**	**B**	**B**
Commercial / Valley (S)				
Fore River Pkwy EB	E	C	E	D
Commercial WB	B	B	B	B
Valley SB	B	B	B	B
Overall	**D**	**C**	**D**	**C**
Valley / Congress (U)				
Congress EB	A	A	A	A
Congress WB	A	A	A	A
Valley NB	B	B	B	B
Gilman / Congress (U)				
Congress EB	A	A	A	A
Congress WB	A	A	A	A
Gilman NB	C	B	D	D
Gilman SB	A	B	B	B
Proposed Drop-Off / Congress (U)				
Congress EB	N/A	A	N/A	A
Congress WB	N/A	A	N/A	A
Drop-Off NB	N/A	C	N/A	C

Approach	Level of Service			
	AM Pre	AM Post	PM Pre	PM Post
Visitor Garage / Congress (U)				
Congress EB	A	A	A	A
Congress WB	A	A	A	A
Visitor Garage NB	C	C	B	C
MOB Garage SB	A	A	A	A
Bramhall / Congress (S)				
Congress EB	A	A	B	B
Congress WB	B	B	C	C
Bramhall NE	B	B	B	B
Deering SW	B	B	B	B
Overall	**B**	**B**	**B**	**B**

S=Signalized, U=Unsignalized

As shown in the table, all approaches to the study area intersections are forecast to operate at acceptable levels of service ('D' or better) during the AM and PM peak hours. Additionally, the operation of most intersection approaches is forecast to be maintained, while some are forecast to improve from the predevelopment conditions due to adjustments to signal timing. As stated previously, GP recommends field adjusting the timing of the intersections in the study area once the expansion is operational. Any intersection approaches that are forecast to decrease in operation are forecast to decrease by one level of service (e.g. 'B' to 'C').

It should be noted that the intersection of Valley Street with A Street was not included in the capacity analysis. However, the removal of the existing employee garage is anticipated to **reduce** the traffic volumes at this intersection by 132 trip ends during the AM peak hour and 102 trip ends during the PM peak hour, which will improve its operation.

Per the request of the City, GP has completed a capacity analysis of the St. John Street signalized intersections with Park Avenue and with Congress Street using the proposed lane uses from the Dunkin Donuts mitigation (attached). The following is a summary of that analysis.

Capacity Analysis Results Summary – Using DD Proposed Mitigation

Approach	Level of Service	
	2023 AM Post	2023 PM Post
Congress / St. John		
Congress EB	C	C
Congress WB	B	C
St. John NB	D	D
St. John SB	C	C
Overall	**C**	**C**

Park / St. John		
Park WB	C	D
St. John NB	C	C
St. John SB	C	C
Overall	**C**	**C**

As shown in the table, both intersections are forecast to operate at acceptable levels of service.

XVIII. Queue Analysis

GP completed a queue analysis using the same Synchro/SimTraffic computer analysis software that was used for the capacity analysis. The queuing analysis involves comparing the postdevelopment 95th percentile queue lengths of the site driveway and turn lanes to the available storage lengths. The queue lengths have been rounded up to the nearest five feet. The following table summarizes the postdevelopment 95th percentile queue lengths based on SimTraffic analyses. The detailed reports are included in Attachment 7C.

Queue Analysis Summary

Approach	Storage Length (ft)	95th Percentile Queue Length (ft)			
		AM Pre	AM Post	PM Pre	PM Post
Park / St John					
Park WB L	95	125	140	185	195
Park WB T	95	200	200	275	280
Park WB TR		225	230	410	525
St. John NB L		160	175	405	335
St. John NB LT		275	290	510	475
St. John NB R	110	165	165	185	175
St. John SB LT		740	330	340	260
St. John SB R	55	105	105	105	105
Congress / St John					
Congress EB L		200	245	195	230
Congress EB T		335	405	315	365
Congress EB R	290	165	295	140	205
Congress WB L	80	65	80	80	95
Congress WB R		100	95	135	140
St. John NB T		90	175	160	345
St. John NB TR	265	115	175	165	220
St. John SB L		135	110	110	110
St. John SB T		170	220	205	210

Approach	Storage Length (ft)	95th Percentile Queue Length (ft)			
		AM Pre	AM Post	PM Pre	PM Post
Margarita's / St. John					
Margarita's EB L		35	40	85	60
Margarita's EB R	125	30	55	60	60
St. John NB LT		30	100	40	100
St. John SB T		--	15	5	10
Garage / D / St. John					
Garage EB LTR		15	N/A	20	N/A
Garage EB LT		N/A	145	N/A	165
Garage EB R	150	N/A	80	N/A	100
D WB LTR		40	35	45	35
St. John NB LTR		10	N/A	20	N/A
St. John NB L	100	N/A	55	N/A	50
St. John NB TR		N/A	120	N/A	165
St. John SB LTR		20	N/A	25	N/A
St. John SB L	75	N/A	60	N/A	85
St. John SB TR		N/A	160	N/A	220
Valley / St. John					
St. John EB LT		90	120	90	140
St. John EB R	110	100	120	125	140
St. John WB L	335	245	215	25	250
St. John WB TR		50	50	60	60
Valley NB L		135	160	115	120
Valley NB TR		245	225	145	165
Valley SB LT		55	50	85	40
Valley SB TR	265	70	45	130	30
Commercial / Valley					
Fore River Pkwy EB L	430	630	395	625	465
Fore River Pkwy EB L	430	640	435	640	505
Fore River Pkwy EB T		1525	330	1225	650
Fore River Pkwy EB T		1420	265	1130	570
Commercial WB T		190	195	225	215
Commercial WB T		190	185	220	205
Commercial WB R	415	80	85	60	60
Valley SB L		105	115	115	115
Valley SB R		115	120	140	145
Valley SB R		120	130	140	155
Valley / Congress					
Congress EB L	50	10	15	15	20
Congress EB TR		5	10	10	15
Congress WB L	50	20	45	35	50
Congress WB TR		5	5	15	5
Valley NB LT		60	55	80	70
Valley NB R	170	55	60	65	55

Approach	Storage Length (ft)	95th Percentile Queue Length (ft)			
		AM Pre	AM Post	PM Pre	PM Post
Gilman / Congress					
Congress EB TR		45	30	30	30
Congress WB T		25	--	30	40
Congress WB L	65	65	45	75	65
Gilman NB LTR		100	70	200	105
Gilman SB LTR		45	50	55	60
Proposed Drop-Off / Congress					
Congress EB TR		N/A	20	N/A	--
Congress WB LT		N/A	85	N/A	115
Drop-Off NB LR		N/A	55	N/A	75
Visitor Garage / Congress					
Congress EB		100	110	30	45
Congress WB		30	35	40	55
Visitor Garage NB		55	50	70	65
MOB Garage SB		25	25	70	70
Bramhall / Congress					
Congress EB L		50	50	120	140
Congress EB TR	400	190	200	215	265
Congress WB L		135	135	180	160
Congress WB TR	65	105	105	105	105
Congress WB L		100	100	105	85
Bramhall NE TR	135	125	125	150	145
Deering SW L		105	120	235	230
Deering SW TR	50	85	85	85	90

As shown in the table, the 95th percentile queue lengths can be accommodated by the storage lengths for most approaches. Some queue lengths exceed the available storage lengths in both the predevelopment and postdevelopment conditions. The 95th percentiles are not forecast to increase by more than three vehicles for most approaches, assuming the length of a vehicle and the associated gap between vehicles is equal to 25 feet. In addition, there are several lanes which are forecast to have improved queue lengths, likely due to the redistribution of traffic in the study area and the modifications to signal timing. The 95th percentile queue length of the proposed Congress Street drop off is not forecast to exceed four vehicles during the AM or PM peak hours.

Per the request of the City, GP has completed a queue analysis of the St. John Street signalized intersections with Park Avenue and with Congress Street using the proposed lane uses from the Dunkin Donuts mitigation (attached). The following is a summary of that analysis.

Queue Analysis Results Summary – Using DD Mitigation

Approach	Storage Length (ft)	95th Percentile Queue Length	
		2023 AM Post	2023 PM Post
Congress / St. John			
Congress EB L		405	250
Congress EB T		690	405
Congress EB R	290	360	155
Congress WB L	80	90	95
Congress WB R		110	155
St. John NB T		370	675*
St. John NB R	175	150	240
St. John SB L	100	140	130
St. John SB T		220	260
Park / St. John			
Park WB L	95	135	175
Park WB T	95	180	270
Park WB TR		205	450
St. John NB L	175	200	250
St. John NB LT		295	740
St. John NB R	110	170	180
St. John SB LT		330	215
St. John SB R	55	105	100

*The queue length for this lane is forecast to extend past the adjacent intersection of St. John Street with Margarita's Driveway. Further discussion below.

As shown in the table, overall the 95th percentile queue lengths are forecast to exceed the available storage lengths by 2-3 vehicles, assuming a vehicle and the associated space between vehicles is 25 feet. The 95th percentile queue lengths of the Park Avenue westbound through lane are forecast to exceed the available storage length by 7 vehicles during the PM peak hour. Additionally, the 95th percentile queue length St. John Street northbound through lane at Congress is reported to be 675 feet during the PM peak hour. The queue was observed to extend past the intersection of St. John Street with Margaritas, which indicates that the actual 95th percentile queue length is longer than the reported 675 feet. The queue length may be reduced by adjusting the intersection timing; however, it would be at the expense of the operation of other approaches.

XIX. Sight Line Evaluation

The speed limit on Congress Street along the site frontage is 25 mph. MaineDOT and the City require an available sight distance of 200 feet. Based on a field review, the available sight distances exiting the site looking left and right exceed 300 feet in each

direction. In addition, proposed MMC sign locations have also been reviewed and will be outside of the public right of way and are not proposed within the sight triangle. When evaluating the sight distance, consideration was also given to potential roadway changes along Congress Street as described previously.

XX. Crash Summary Data

Gorrill Palmer obtained the crash data from MaineDOT for the period of 2015-2017, the most recent period available (See Section 2 of Sections 1-6, Attachment 2A).

In order to evaluate whether a location has a crash problem, MaineDOT uses two criteria to define a High Crash Location (HCL). Both criteria must be met in order to be classified as an HCL.

1. A critical rate factor (CRF) of 1.00 or more for a three year period. A CRF compares the actual crash rate to the rate for similar intersections in the state. A CRF of less than 1.00 indicates a rate of less than average **and**:

2. A minimum of eight crashes over the same three year period.

Based on the crash data provided by MaineDOT, there are seven high crash locations in the vicinity of the study area:

- Intersection of Park Avenue with Valley Street
- Intersection of Congress Street with Gilman Street
- Intersection of St. John Street with A Street
- Intersection of Park Avenue with St. John Street
- Valley Street from A Street to C Street
- Congress Street from Forest Street to Weymouth Street
- St. John Street from Congress Street to Non-Intersection (just south of Park Avenue)

To better evaluate the high crash locations and identify correctable crash patterns, the police reports for these locations were provided by MaineDOT and used to create collision diagrams, included as an attachment to this section. The following discusses the high crash locations as well as pedestrian and bicycle crashes in more detail.

Park Avenue / Valley Street

This intersection has a CRF of 1.80 and experienced 10 collisions during the most recent three-year period. It is an unsignalized intersection that is STOP controlled on Valley

Street with free flowing traffic on Park Avenue. The northbound Valley Street approach is one-way into the intersection.

There is one crash pattern at this intersection involving vehicles turning left from northbound Valley Street onto westbound Park Avenue and colliding with vehicles traveling westbound on Park Avenue. To address this pattern, we recommend restricting left turns from Valley Street. An additional review of the police reports showed that a contributing factor of one of the crash pattern collisions was limited sight distance due to a snowbank on Valley Street. Additional winter maintenance is recommended. It should be noted that the proposed expansion traffic is not expected to exacerbate the existing crash pattern.

Additionally, one collision that occurred at this intersection involved a pedestrian and one involved a bicyclist. The traffic from the proposed MMC expansion is not expected to exacerbate this pattern.

Congress Street / Gilman Street

This intersection has a CRF of 3.26 and experienced 20 collisions during the most recent three-year period. It is an unsignalized intersection that is STOP controlled on the Gilman Street approaches with free flowing traffic on Congress Street. The southbound Gilman Street approach is one-way into the intersection. Based on a review of the collision diagram there are three crash patterns at this intersection; southbound through traffic on Gilman Street failing to yield to eastbound through traffic on Congress Street, southbound through traffic on Gilman Street failing to yield to westbound through traffic on Congress Street, and rear end collisions involving eastbound Congress Street traffic.

There were four collisions that involved southbound through traffic on Gilman Street failing to yield the right of way to the eastbound through traffic on Congress Street and three collisions that involved vehicles coming from the same direction failing to yield the right of way to westbound through traffic on Congress Street. These types of collisions may be due to the buildings along Congress Street blocking the sight distance of the southbound traffic. Because the MMC employee parking is being relocated to St. John Street, both the AM and PM total entering traffic volume for this intersection will be decreased from the Predevelopment condition to the Postdevelopment condition.

There were three rear end collisions on Congress Street eastbound. All three were caused by drivers following too closely and/or driver inattention. Additionally, all three collisions involved vehicles stopping for pedestrians in the crosswalk. It is possible that the removal of the traffic signal at the intersection of Congress Street with Valley Street may improve this crash pattern. The crosswalk is located close to the currently signalized intersection. After a vehicle passes through a signalized intersection, they do not anticipate stopping again immediately, which could be a contributing factor of the rear end

collisions. If the signal is removed, drivers may be more likely to anticipate stopping. Additionally, if the signal is removed, it may reduce the time that vehicles are queued over the crosswalk, which reduces the time that pedestrians may walk between queued vehicles or be blocked from view by the queue.

St. John Street / A Street

This intersection has a CRF of 1.82 and experienced 8 collisions during the most recent three-year period. It is an unsignalized four-leg intersection with two-way traffic on all approaches. Based on a review of the collision diagram, there were no correctable crash patterns identified at this intersection. It should be noted that with the removal of the existing employee garage and the construction of the proposed employee garage, the traffic patterns at the intersection are forecast to change (decrease in traffic volume), which may reduce crashes.

Park Avenue / St. John Street

This intersection has a CRF of 1.63 and experienced 36 collisions during the most recent three-year period. It is a signalized four-leg intersection with two-way traffic on all approaches, with the exception of Park Avenue to the east of St. John Street, which is one way away from the intersection. Based on a review of the collision diagram, there are four crash patterns at this intersection. It should be noted that a local Dunkin Donuts (DD) project on St. John Street is also proposing mitigation at this intersection and this project should coordinate with what is already being proposed by Dunkin Donuts.

One crash pattern involved vehicles in the northbound St. John Street left turn lane attempting to go straight through the intersection from the left-most lane and colliding with left turning vehicles in the adjacent left-through lane. There were 13 such crashes at this intersection during the most recent three year period. Most of the drivers that incorrectly attempted to travel through the intersection claimed that they believed they could travel through the intersection from that lane. Overhead lane use signing for the northbound approach mounted next to the traffic signal heads similar to the existing signs facing the westbound and southbound approaches to this intersection are recommended. The DD project is proposing channelization striping for the dual left turn lanes.

Another crash pattern was northbound left turning vehicles sideswiping one another while traveling in the left turn lane and left-through lane from the northbound St. John Street approach to the intersection. Six of these crashes occurred at this intersection during the most recent three year period. Many of the crashes involved in the two crash patterns discussed at this intersection so far occurred either during the winter or in the spring when the striping of the skip line may have faded away. There is already a skip line striping between the left turn lane and the left-through lane through the intersection that the DD project is proposing to accentuate.

A third crash pattern at this intersection involves right angle collisions between westbound through vehicles on Park Avenue failing to yield to northbound through vehicles on St. John Street. Three of these crashes occurred at this intersection during the most recent three year period. All three collisions involved the westbound Park Avenue vehicle running the red light. To aid in potentially reducing this type of crash, GP recommends the traffic signal heads be fitted with backplates that have retroreflective boarders, and that the timing of the yellow interval be field reviewed and extended if necessary.

The fourth crash pattern at this intersection involved rear-end collisions involving vehicles at the northbound approach to this intersection. One potential contributing factor to rear end collisions at signalized intersections is inadequate signal clearance times. This crash pattern may be mitigated by reviewing the signal timings of this intersection to assure that adequate signal clearance times are provided for this approach.

Valley Street from A Street to C Street

This roadway link has a CRF of 2.89 and experienced 8 collisions during the most recent three-year period. There were no correctable crash patterns identified; however, there were five crashes involving parked vehicles. Of the five crashes involving parked vehicles, three crashes involved vehicles that were parked illegally. Stricter enforcement of the parking regulations may help reduce the number of crashes along this segment of Valley Street. It should also be noted that there was one crash involving a pedestrian at this location during the most recent three year period.

Recent counts are not available for this segment of Valley Street since it was not identified as part of the study area for in-depth analysis. However, as shown in the Traffic Impact Study on Figure 9, "Net Impact Phase 3" no impacts on this segment of Valley Street are forecast due to the proposed Phase 3 expansion. Additionally, as shown on Figure 15 in the Traffic Impact Study, "Net Impact due to Proposed Employee Garage" **there is forecast to be a decrease of traffic through that section of Valley Street of 103 trip ends during the AM peak hour and 71 trip ends during the PM peak hour.**

Congress Street from Forest Street to Weymouth Street

This section of Congress Street has a CRF of 1.45 and experienced 10 collisions during the most recent three-year period. Based on a review of the collision diagram there is one crash pattern of rear end collisions in the eastbound direction. Of the 10 collisions, five were rear end collisions on Congress Street eastbound. The five collisions were caused by drivers following too closely. There are multiple driveways in this roadway segment, including an entrance to the Maine Medical Center visitor parking garage.

An overall review of the collisions showed that there were 9 collisions that occurred on a weekday and of those, 2 occurred during the AM peak commuter hour and 4 occurred during the PM peak commuter hour, when traffic volumes are heaviest. Additionally, one of the collisions that occurred in this area involved a bicyclist.

MMC is currently working with City Staff on a new design for this section of roadway and is expected to include restriping, curb extensions, sidewalk extensions, and bicycle lanes.

St. John Street from Congress Street to Non-Intersection (just south of Park Avenue)

This section of St. John Street has a CRF of 3.00 and experienced 30 collisions during the most recent three-year period. Based on a review of the collision diagram, there are two crash patterns.

The first crash pattern involves sideswipe crashes involving vehicles traveling northbound on St. John Street, which are caused by vehicles making lane changes.

Of the 30 collisions, 17 involved vehicles attempting to turn left onto St. John Street from various driveways. There are many driveways on this link of St. John Street including McDonald's, Amato's, Sullivan Tire, Dunkin' Donuts, Lang's Express, Salty Sally's Bare and Grille and Portland Physical Therapy. Of the 30 crashes in this roadway segment, two involved left turns into driveways from St. John Street.

In a recent Traffic Impact Study completed by Maine Traffic Resources for a Dunkin Donuts relocation project in this section of St. John Street, a "road diet" was recommended that would include a single travel lane in each direction with a center turn lane. Gorrill Palmer supports that recommendation.

Congress Street / St. John Street

This intersection is NOT a high crash location, but did experience 25 crashes over the reported three-year review period. To better evaluate this location and identify correctable crash patterns, the police reports provided by MaineDOT were used to create a collision diagram (attached). Based on a review of the collision diagram, there are two crash patterns at the intersections; rear end collisions on St. John Street northbound and rear end collisions on St. John Street southbound. These may be mitigated with adjustments to the clearance times of the intersection. It should be noted that this intersection is proposed to be modified as part of the Dunkin' Donuts project mitigation, which may impact any crash patterns. It should also be noted that this intersection is converting from exclusive pedestrian phasing to concurrent pedestrian phasing which may have a positive impact on the operations of this intersection.

Pedestrian Collisions

There were 22 collisions involving pedestrians throughout the study area. Of those, 15 occurred when the pedestrian was within the marked crosswalk, seven of which involved one vehicle rear ending another that was yielding to the pedestrian. Several of the collisions involved pedestrians crossing without the walk sign at a signalized intersection, or abruptly entering the intersection. Others involved vehicles failing to yield to the pedestrians in the crosswalks. The attached Figure A in Attachment 7D shows the locations of the pedestrian collisions. Several of the pedestrian involved collisions appear to be located at or near the intersection of Congress Street with Bramhall Street. Most of these collisions occurred after dark. Although there is lighting at the intersection, additional lighting may improve pedestrian visibility. Additionally, three of the rear end collisions due to vehicles yielding to pedestrians in the crosswalk occurred on Congress Street at Gilman Street, discussed above.

Bicycle Collisions

There were 9 collisions involving bicyclists throughout the study area. One collision involved a bicyclist riding in a bike lane being struck by a turning vehicle on Park Avenue. Several of the collisions involved bicyclists riding in the roadway, but not following traffic rules. The bicycle crashes are also shown on the attached Figure A.

XXI. Left Turn Lane Evaluation

The need for a left turn lane on Congress Street at the proposed drop-off has been evaluated using two different sources. The first was Figure 8-19 from the MaineDOT Highway Design Guide, "Volume Warrants for Left-Turn Lanes at Unsignalized Intersections on 2-Lane Highways (40 mph)." Although the speed limit on Congress Street is unposted and assumed to be 25 mph, the 40 mph warrant is the lowest speed chart available for reviewing left turn lanes. This yields a conservative lane warrant evaluation. Based on a review of the evaluation, a left turn lane is warranted during the AM peak hour and is not warranted in the PM peak hour. The detailed evaluation is included in Attachment 7D.

The second source was the National Cooperative Highway Research Program (NCHRP) 457, Figure 2-5 "Guideline for determining the need for a major-road left-turn bay at a two-way stop controlled intersection." This figure allows for the use of the assumed 25 mph speed limit. This evaluation supported the MaineDOT evaluation and indicated that the warrant is met in the AM peak hour but is not warranted in the PM peak hour. The detailed evaluation is included in Attachment 7D.

In addition to the two formal left turn lane warrant evaluations, the turning movements and crash history on the corridor were also considered in determining if left turn treatment should be considered. As discussed in the previous section, Congress Street in front of the proposed drop-off is a high crash location, with a crash pattern of rear end collisions. Additionally, the left turn volumes within this segment of Congress Street are shown on Figure 18 in Attachment 7A. Based on the left turn lane evaluation the crash history, and the left turn volumes, GP recommends that accommodations for left turning traffic be considered in the final design of Congress Street along the site frontage.

XXII. Executive Summary

1. The proposed development is forecast to generate 110 and126 trip ends during the AM peak hours of adjacent street and generator respectively, and 107 and 152 trip ends during the PM peak hours of adjacent street and generator respectively, and 172 trip ends during the Saturday peak hour of the generator. This level of trip generation requires a MaineDOT traffic movement permit.

2. All study area intersection approaches are forecast to operate at acceptable levels of service in the Postdevelopment conditions. Additionally, for signalized intersections, we recommend that timing and phasing of the study area intersections be field adjusted as needed upon completion of the MMC expansion.

3. Overall, the 95th percentile queue lengths are not forecast to exceed the predevelopment queue lengths by more than three vehicles for most approaches. For many approaches, the 95th percentile queue lengths are forecast to decrease from the predevelopment conditions due to both the redistribution of traffic throughout the study area and the optimization of signal timing. However, the proposed changes as a result of the mitigation associated with the proposed DD on St. John Street is forecast to lengthen queues of traffic in the immediate area.

4. The existing sight distances at the proposed Congress Street drop off exceed MaineDOT and City of Portland Standards.

5. The MaineDOT crash data indicates that there are seven high crash locations in the study area:

    - Intersection of Park Avenue with Valley Street
    - Intersection of Congress Street with Gilman Street
    - Intersection of St. John Street with A Street
    - Intersection of Park Avenue with St. John Street
    - Valley Street from A Street to C Street

- Congress Street from Forest Street to Weymouth Street
- St. John Street from Congress Street to Non-Intersection (just south of Park Avenue)

6. Based on a review of the MaineDOT and NCHRP left turn lane warrants at the proposed Congress Street drop-off / pick-up loop, as well as the crash history and the left turning volumes at adjacent intersections on Congress Street, GP recommends left turning traffic be a consideration in the final design of Congress Street from Forest Street to Weymouth Street.

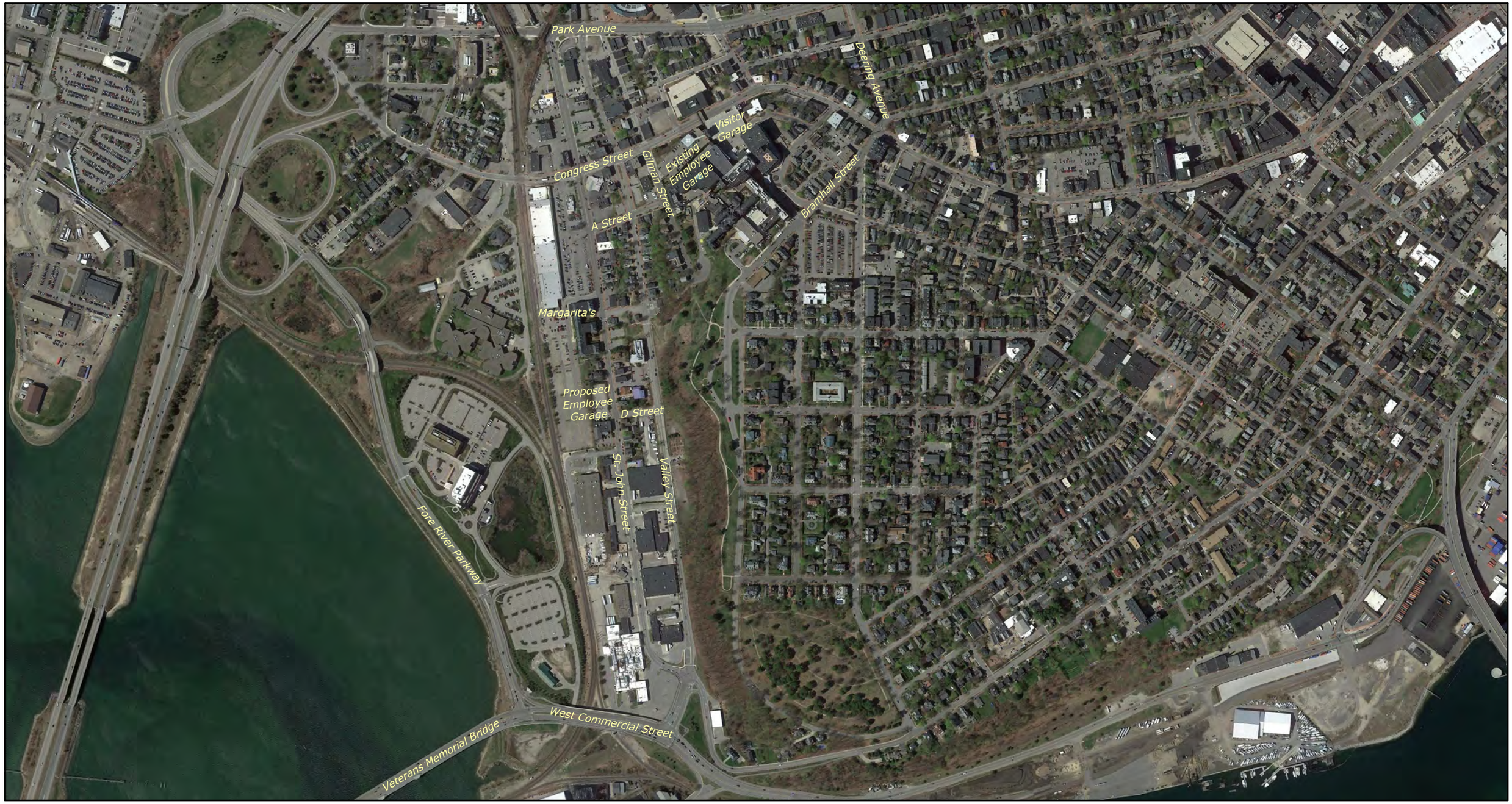
7. Overall, the proposed expansion is forecast to have a moderate impact on the surrounding roadway network; however, the surrounding roadway network has the capacity to accommodate the proposed project.

Attachment 7A

Site Location Map
Turning Movement Figures
VHB Travelshed

Location Map

Figure No. 1



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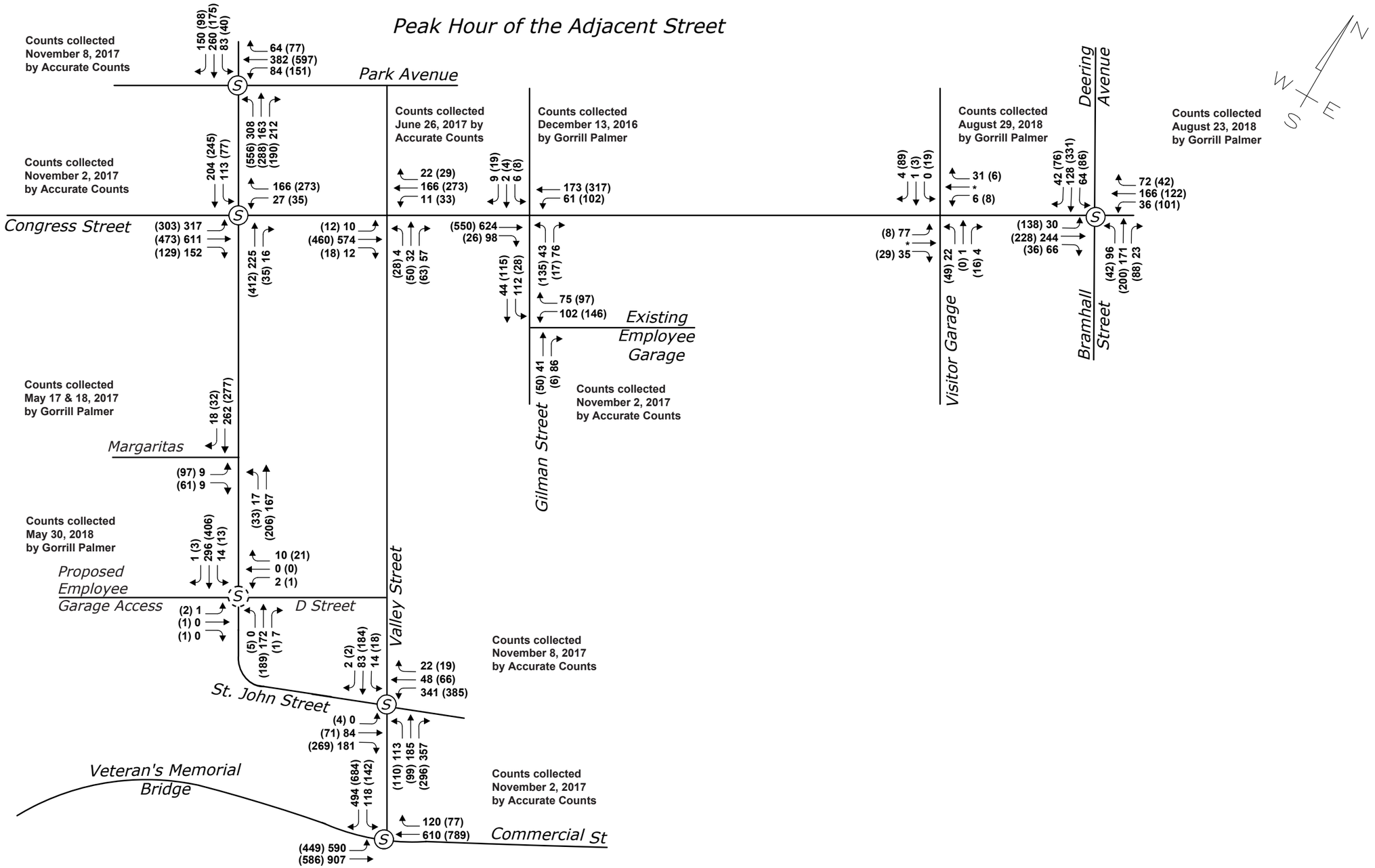

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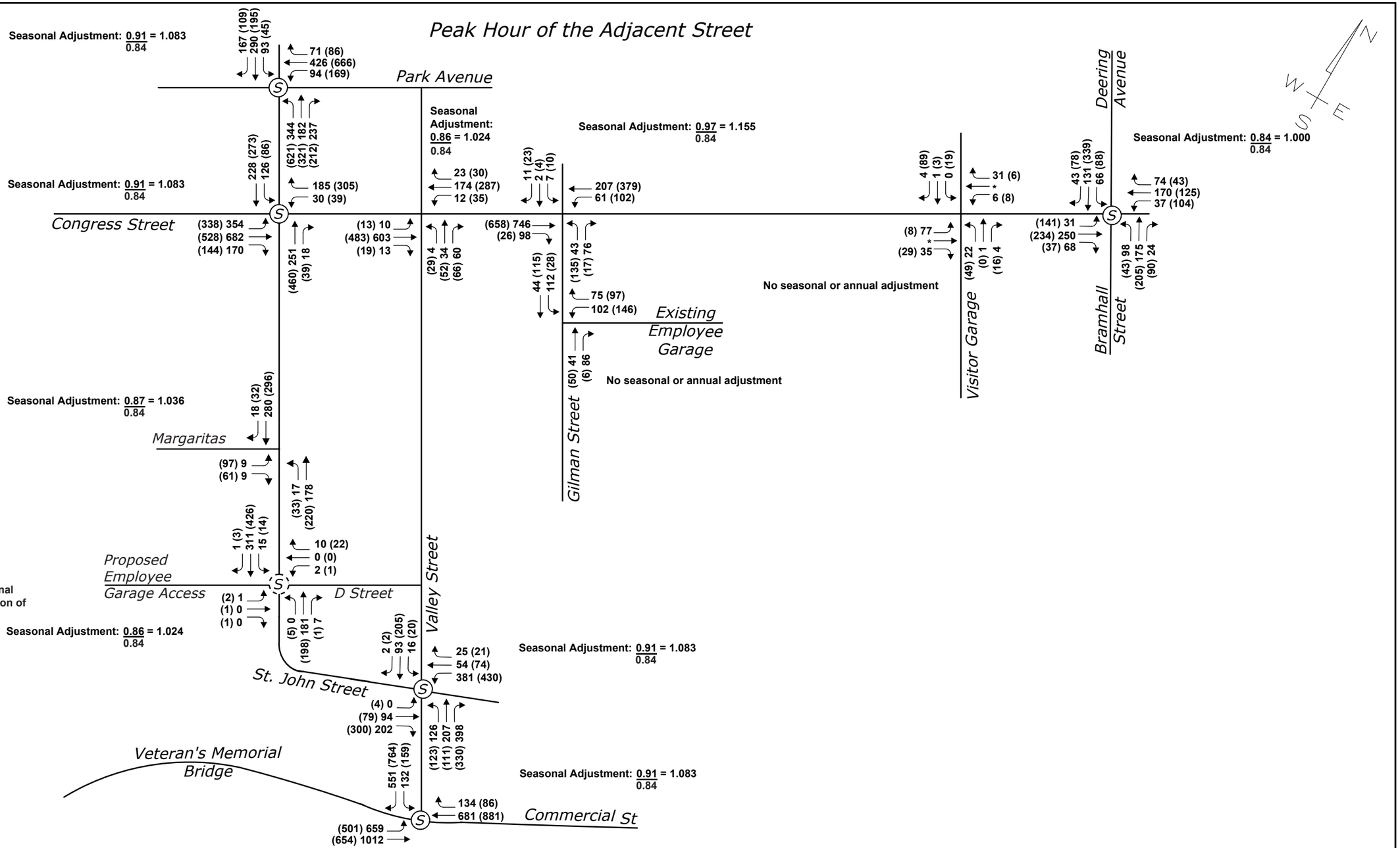
2023 Adjusted Volumes

Figure No. 3



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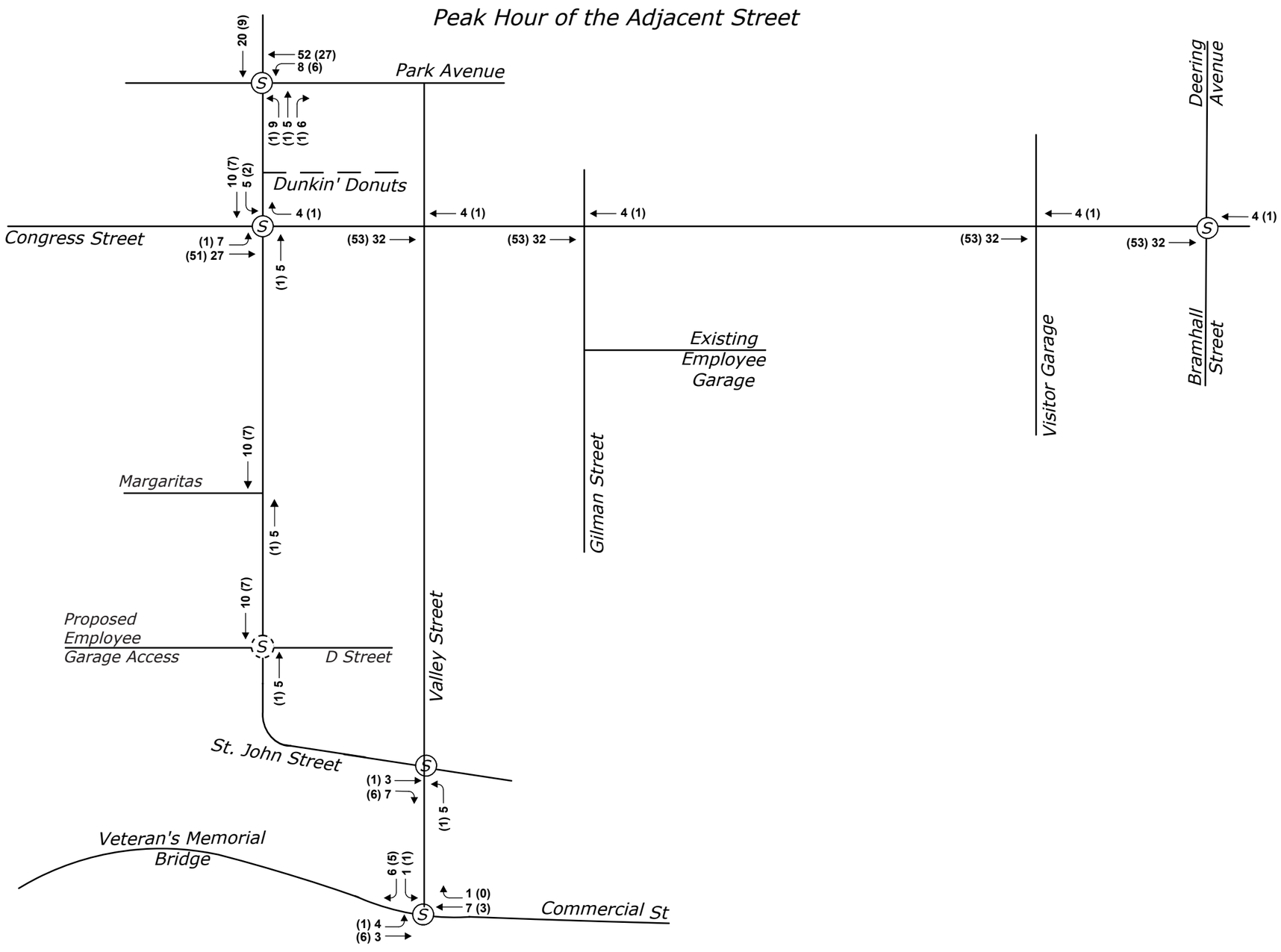
Other Development

Figure No. 4



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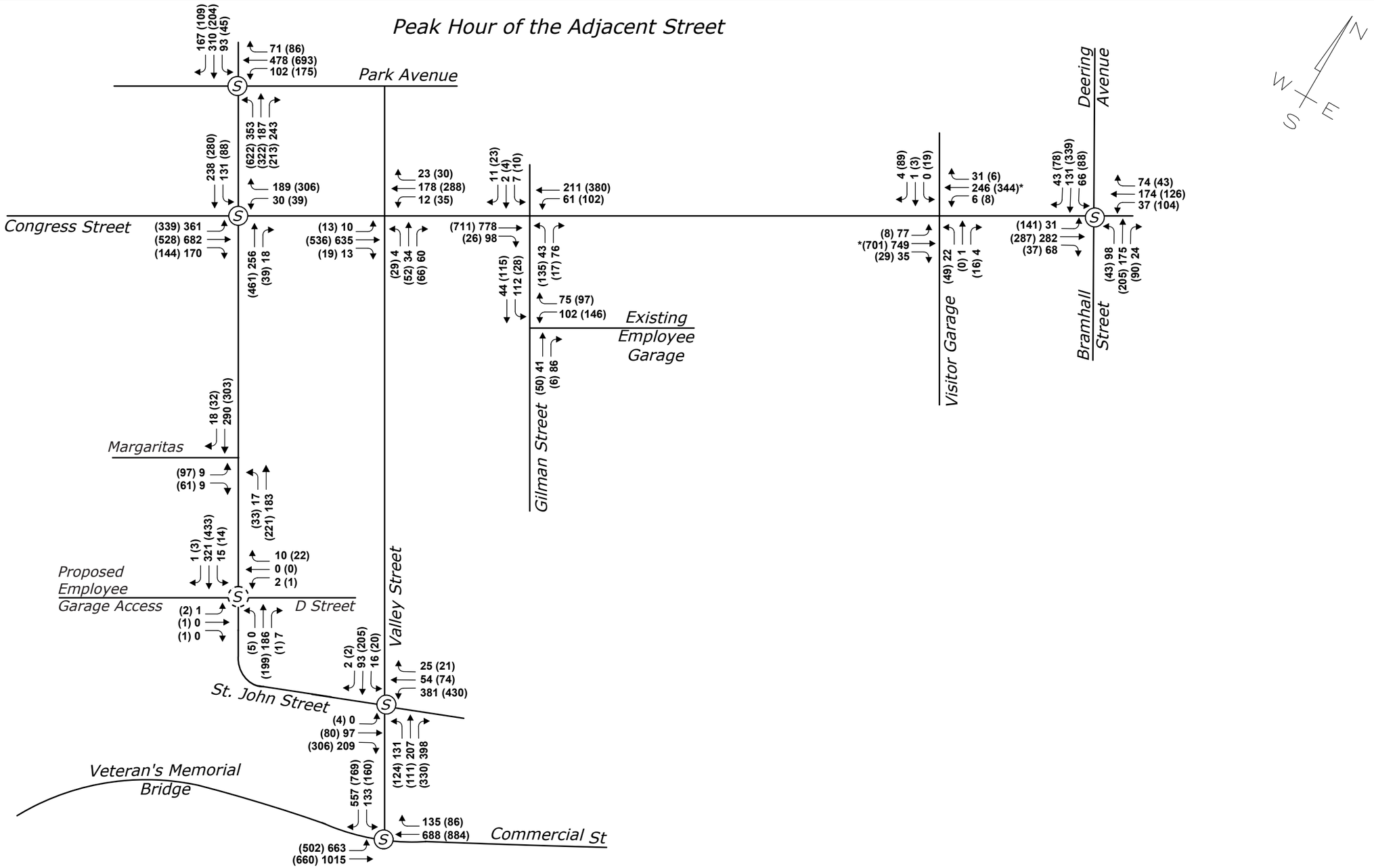
2023 Predevelopment

Figure No. 5



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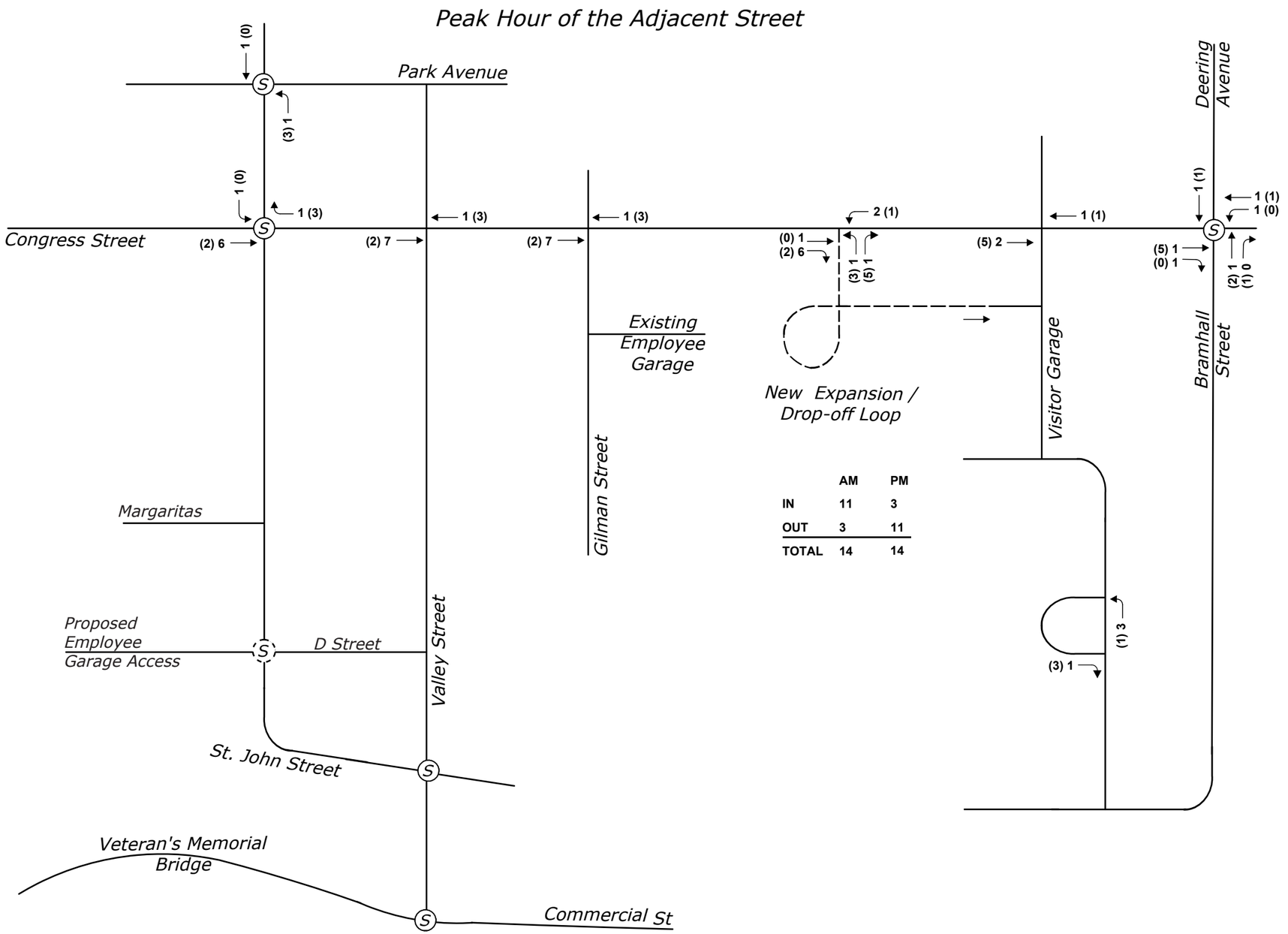
Phase 3 Patient/Visitor Assignment

Figure No. 6



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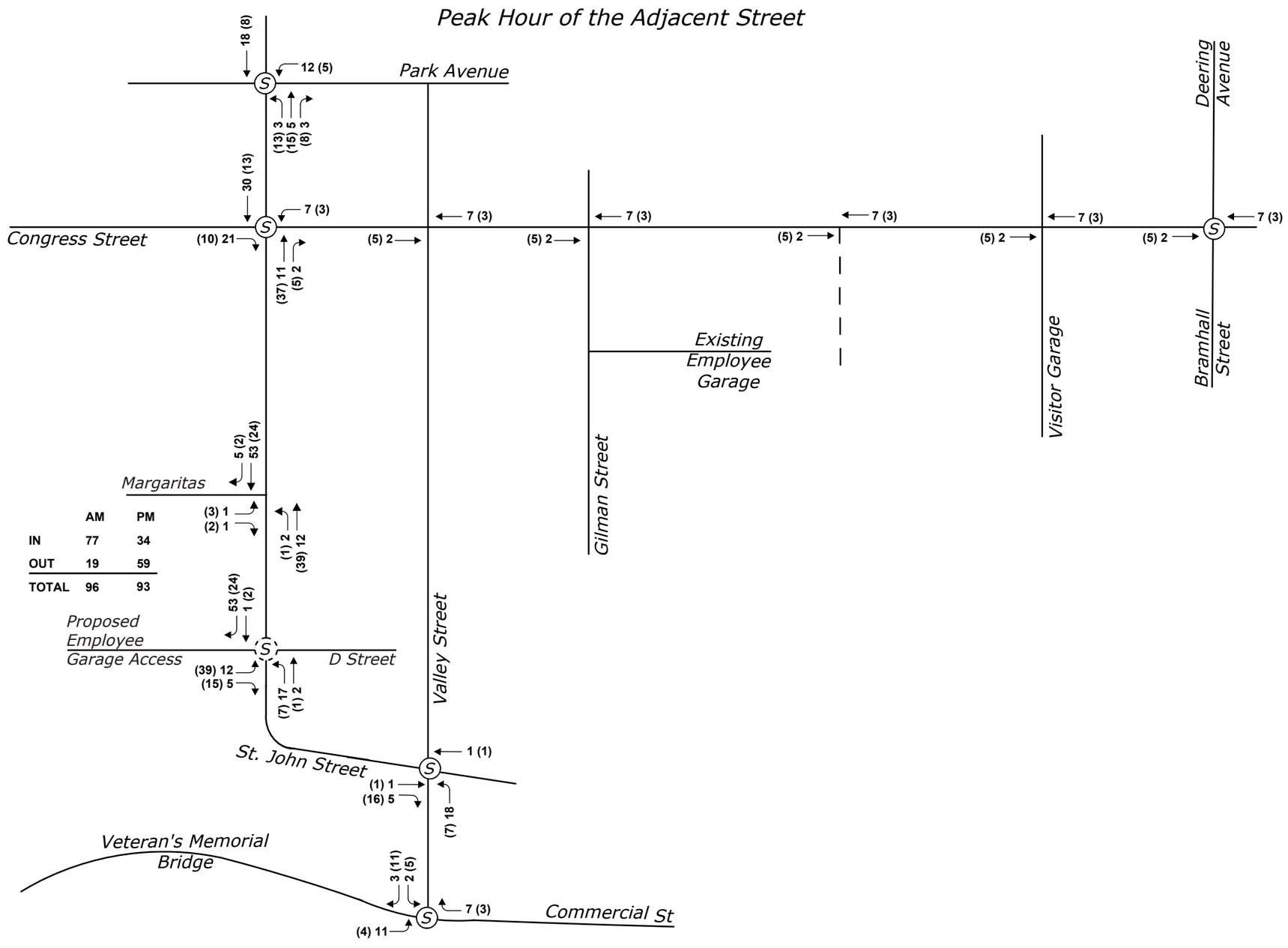
Phase 3 Employee Trip Assignment

Figure No. 7



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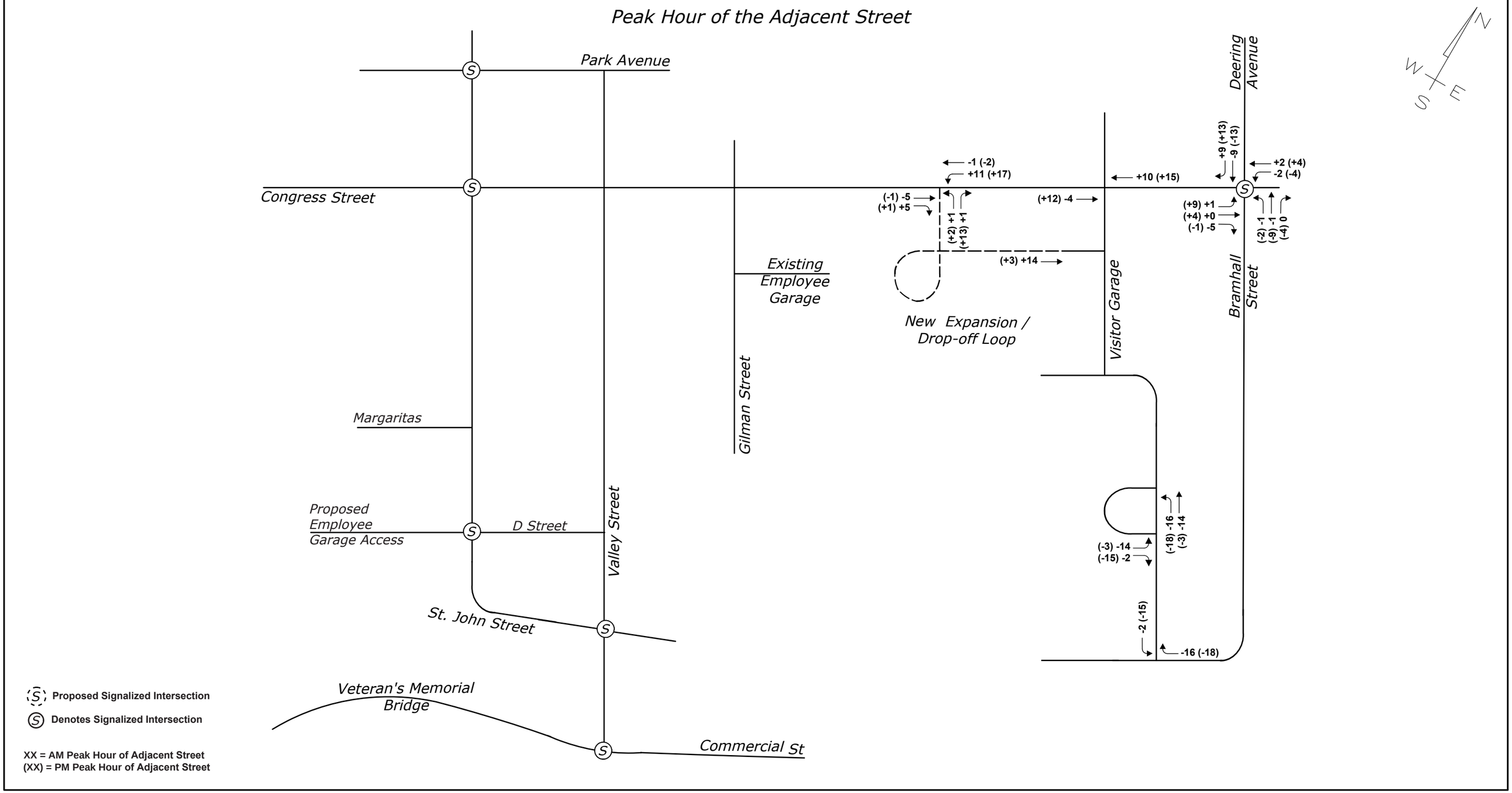
Phase 3 Drop Off Reassignment

Figure No. 8



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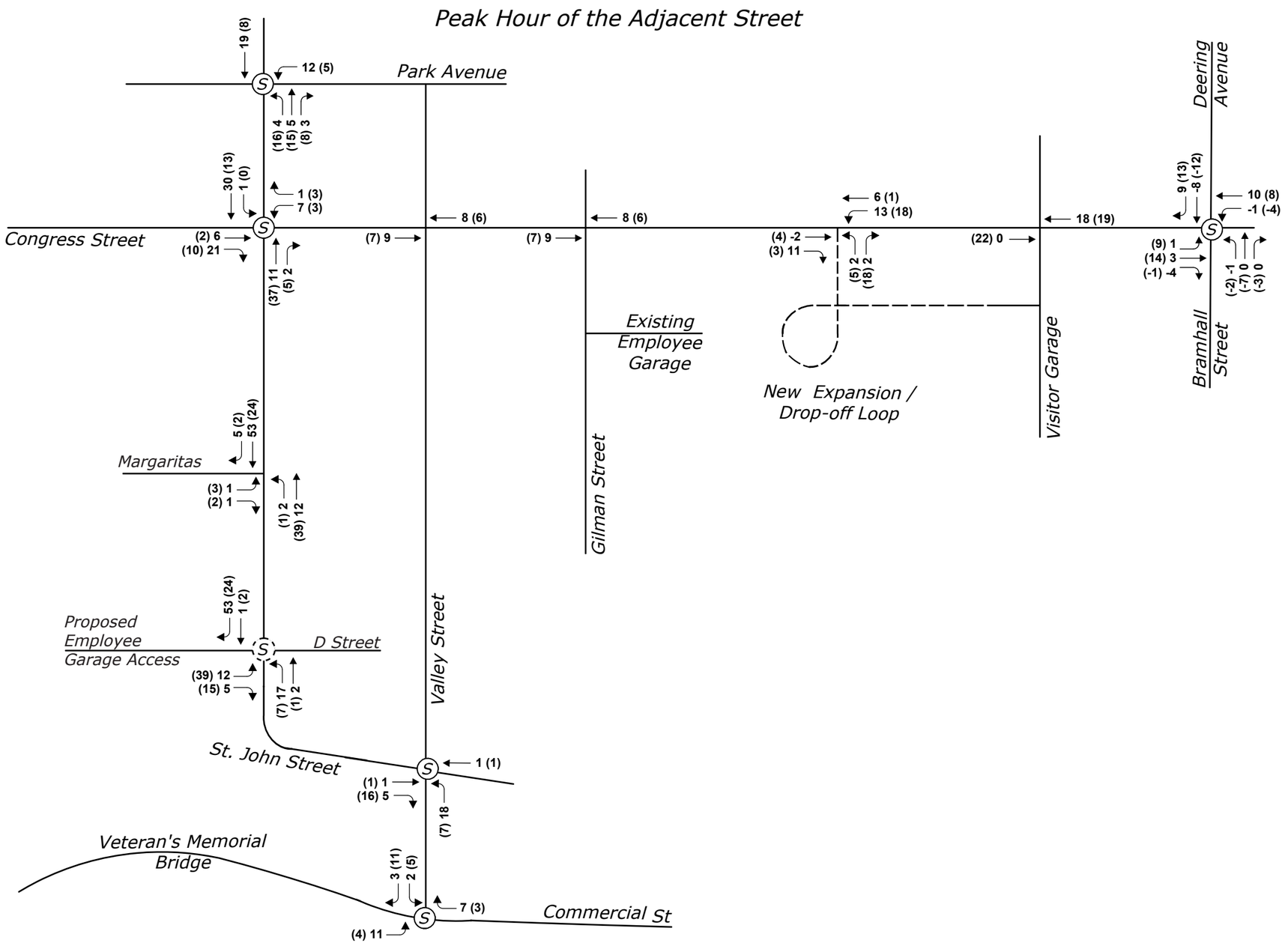

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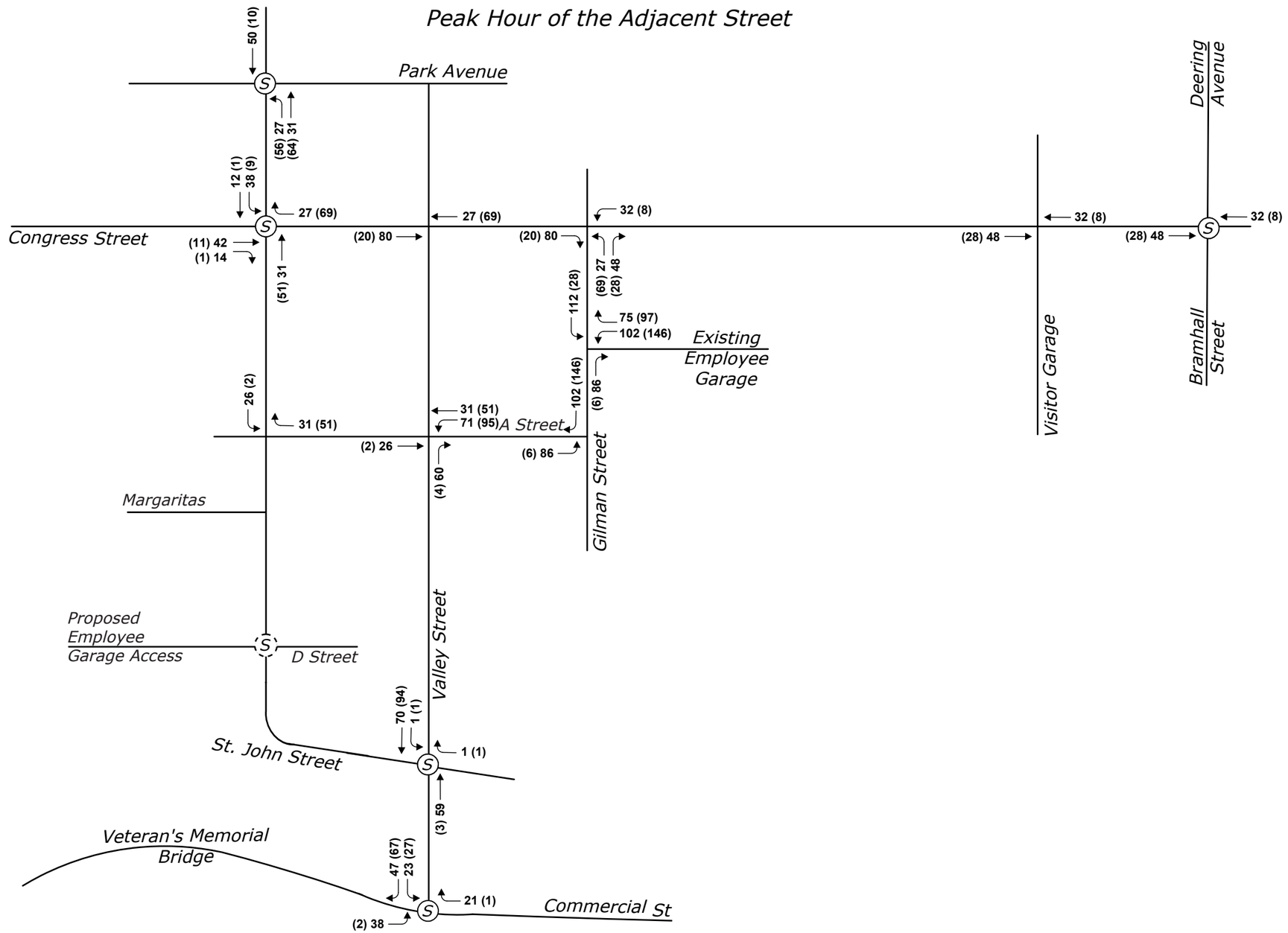
Existing Employee Garage Assignment

Figure No. 10



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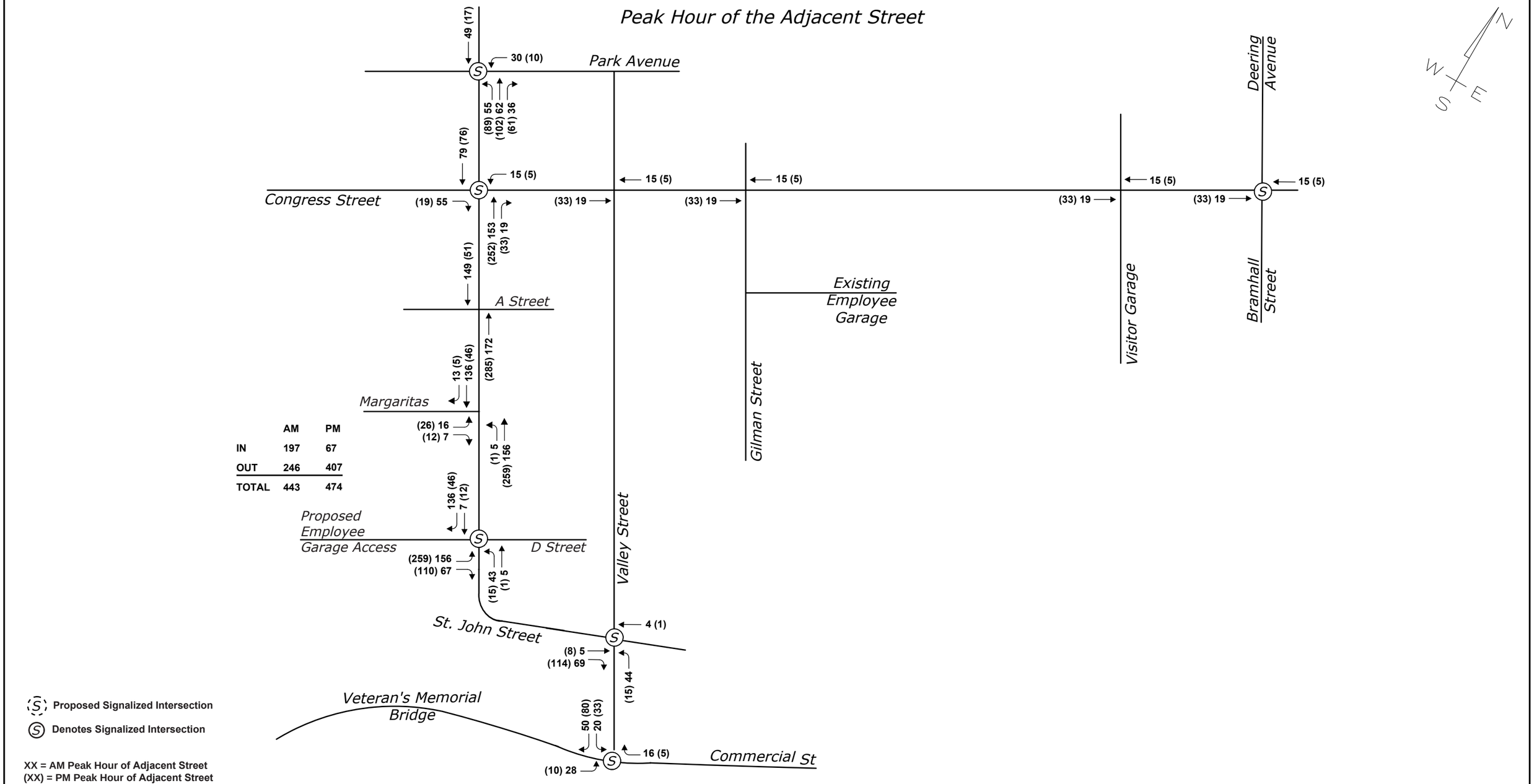
Proposed Garage Reassignment

Figure No. 11



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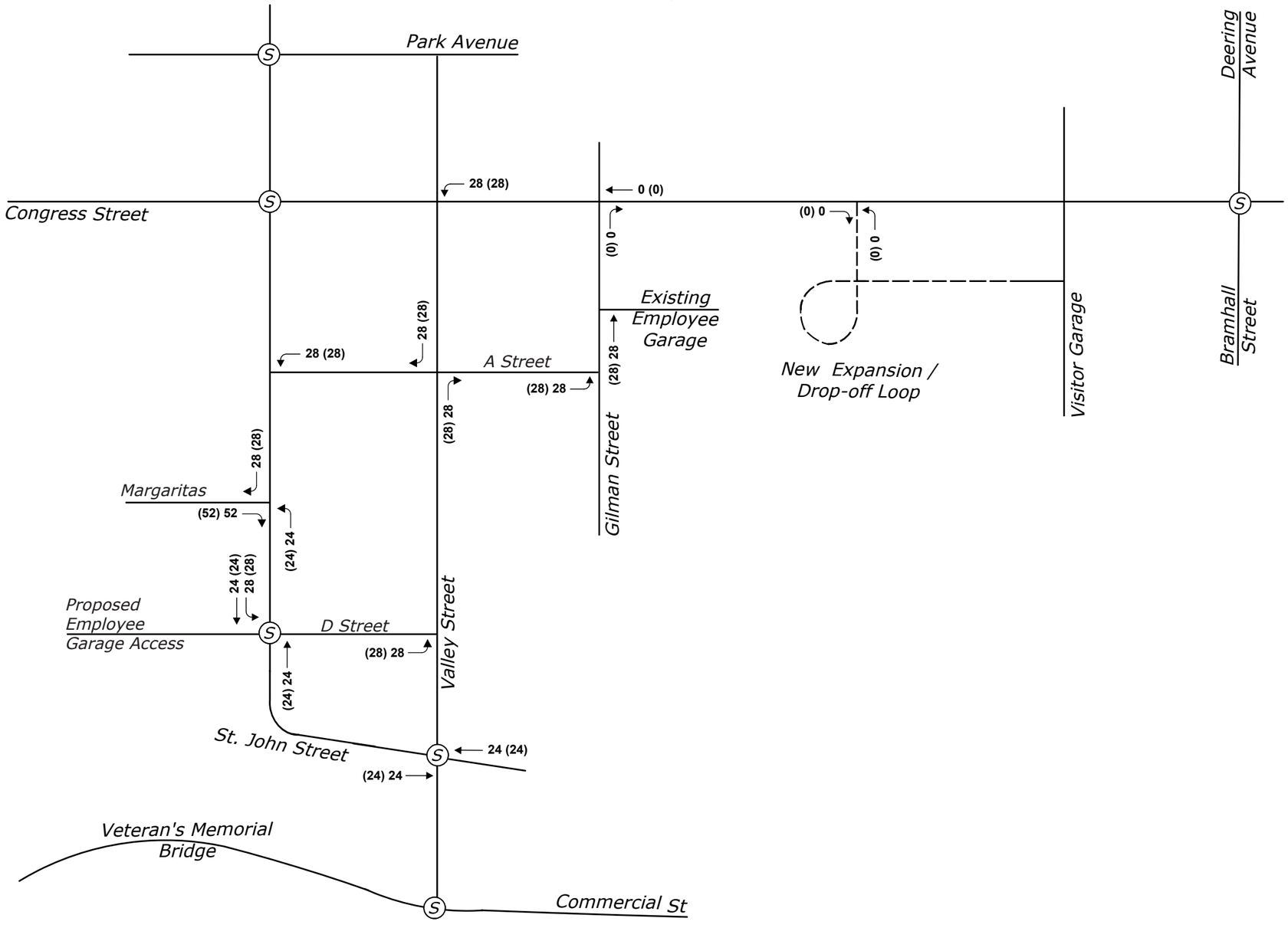
Shuttle Assignment

Figure No. 12

Peak Hour of the Adjacent Street



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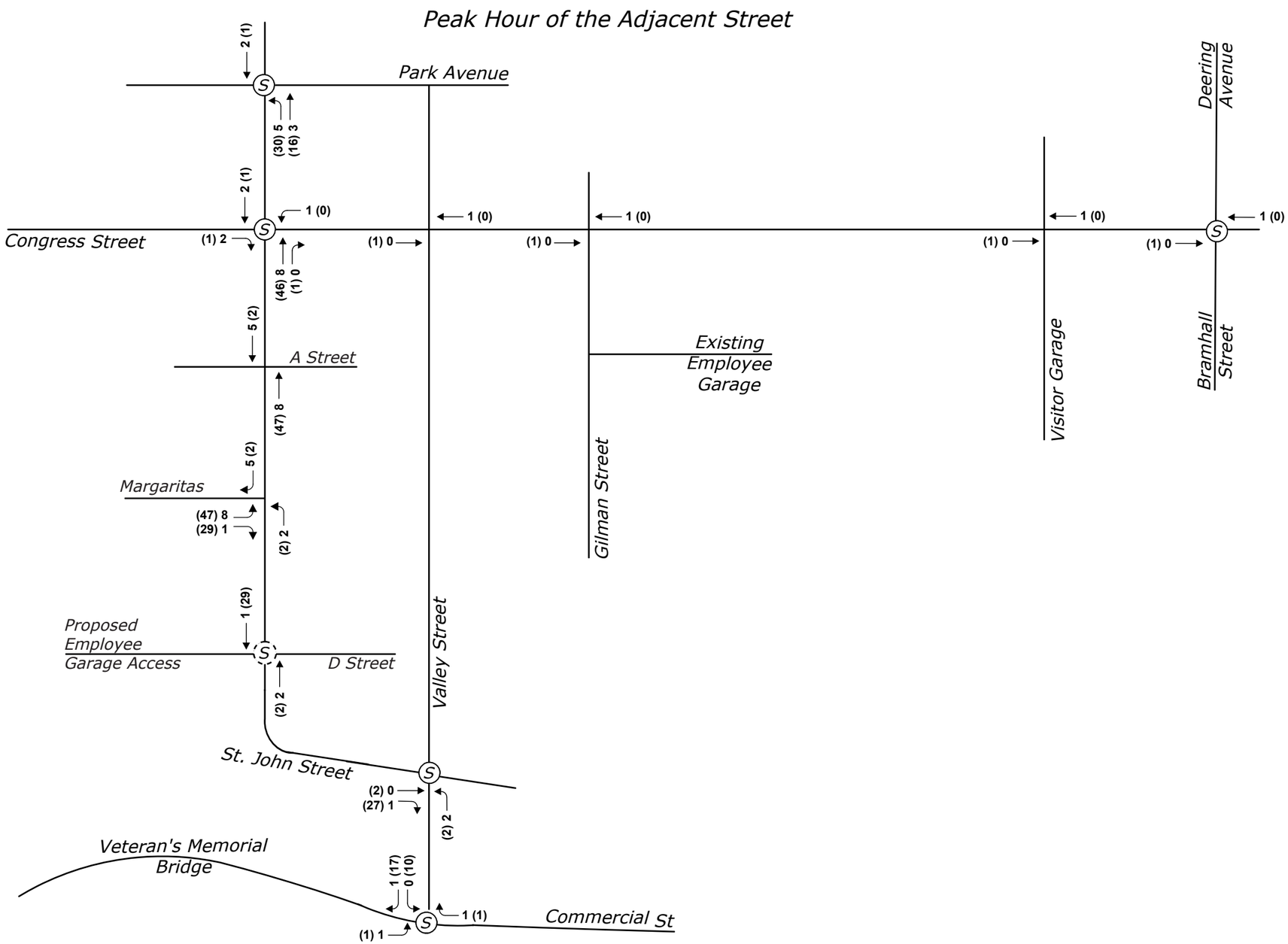
222 St. John Existing MMC Traffic

Figure No. 13



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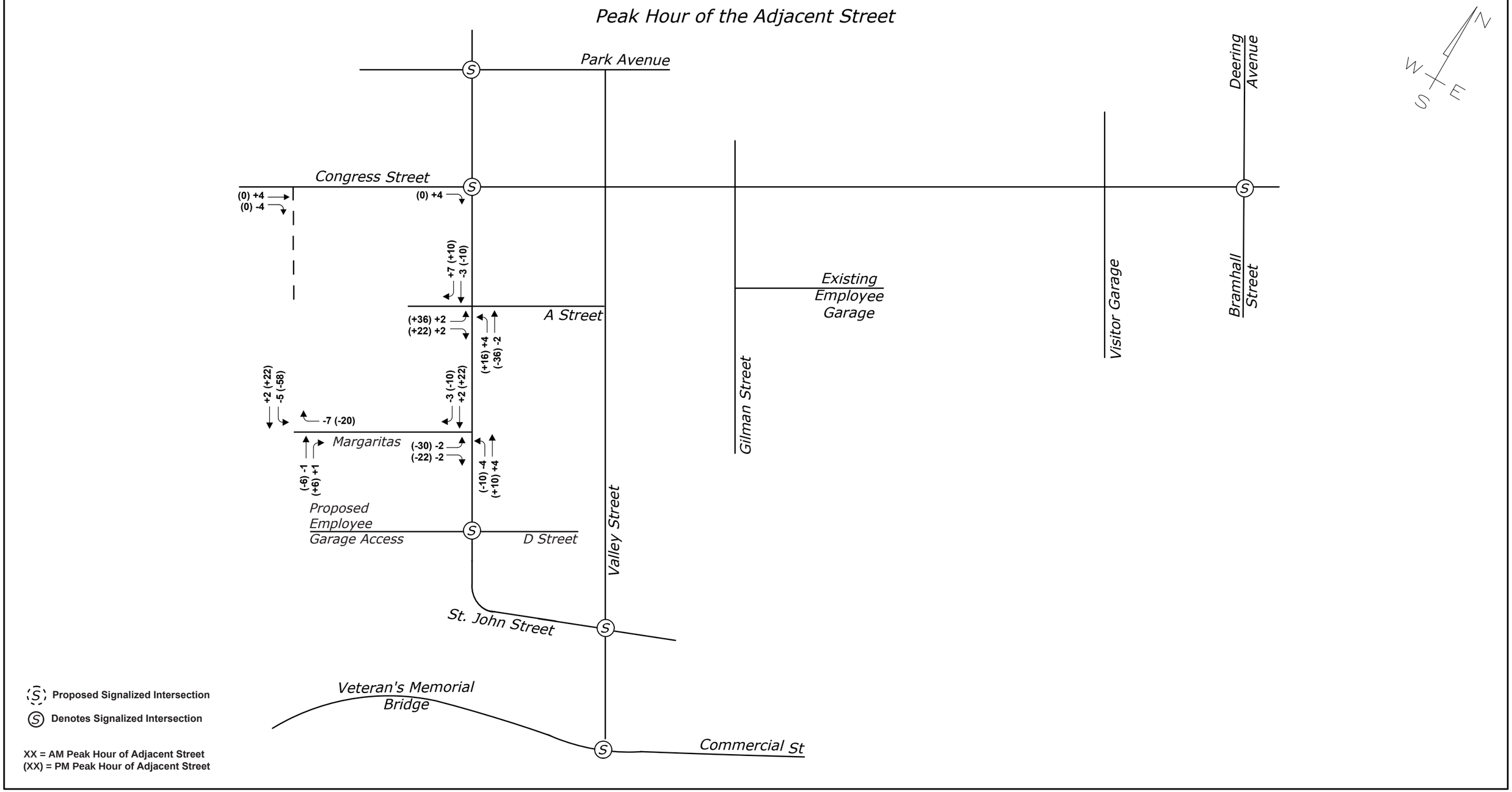
222 St. John Cut-Through (Non-MMC)

Figure No. 14



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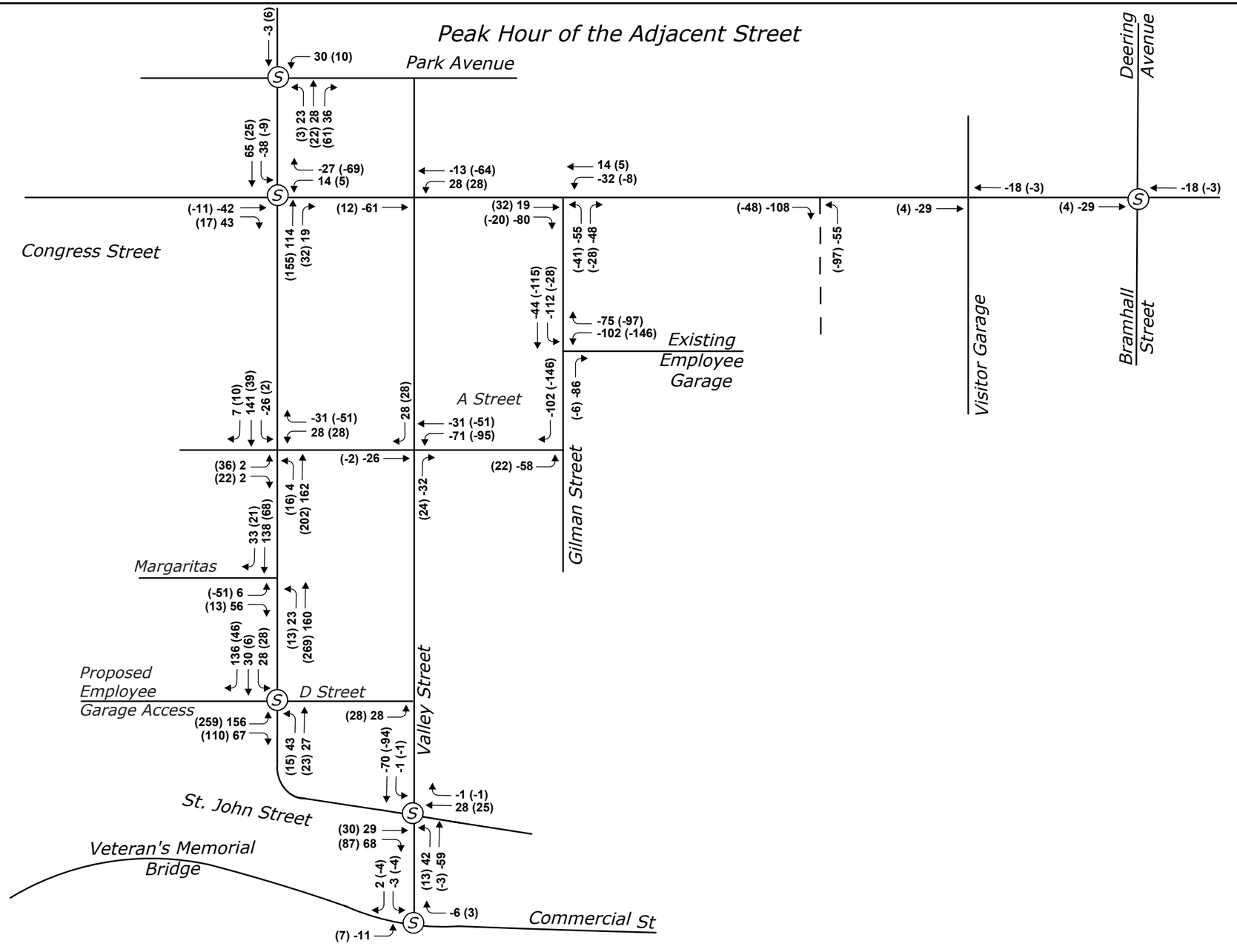
Net Impact Due to Proposed Employee Garage

Figure No. 15



Bramhall St. - 22; MMC Congress Street Building
PORTLAND, MAINE

Design: EAL
Draft:
Checked: RED
Scale: NONE
Date: SEP 2018
File Name: 28866.01 - TIS Figures

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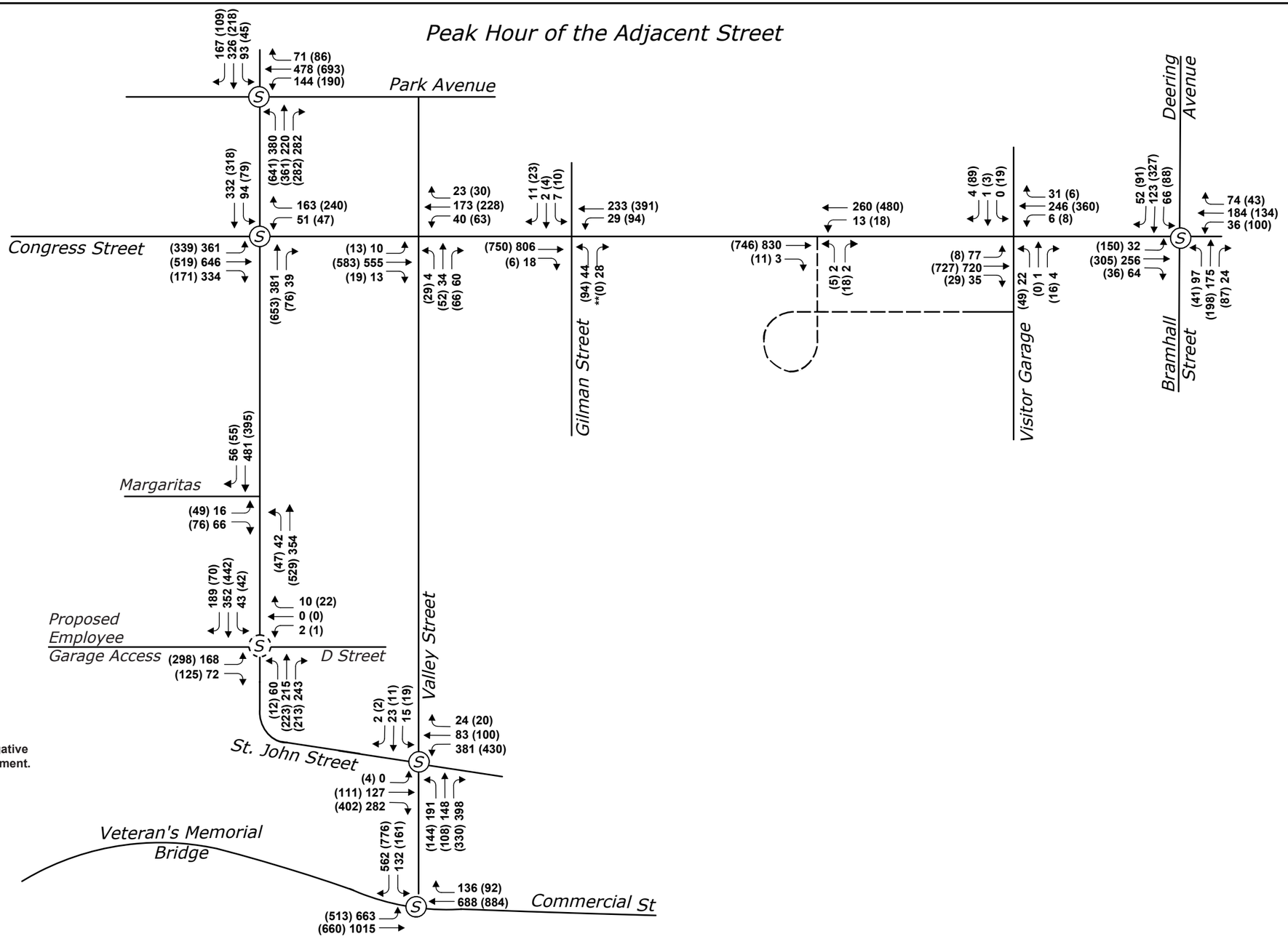

** Post development volumes forecast to be negative during the PM peak hour based on trip re-assignment.

* Through volumes based on volumes at adjacent intersections.

(S) Proposed Signalized Intersection

(S) Denotes Signalized Intersection

XX = AM Peak Hour of Adjacent Street
(XX) = PM Peak Hour of Adjacent Street

Bramhall St. - 22; MMC Congress Street Building
PORTLAND, MAINE

Design: EAL
Draft:
Checked: RED
Scale: NONE
Date: OCT 2018
File Name: 2866.01 - Revised

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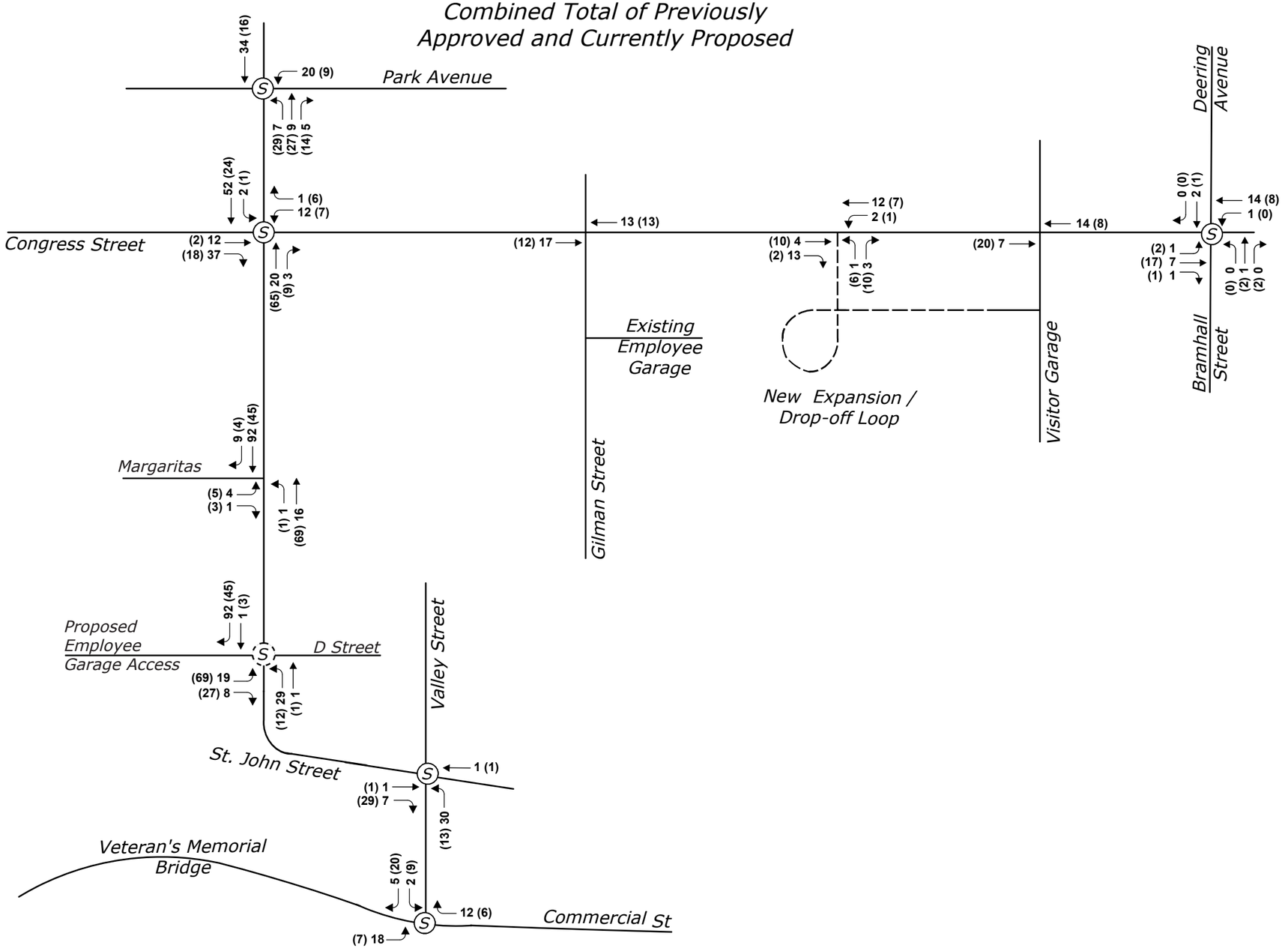
Study Area

Figure No. 17



Bramhall St. - 22; MMC Congress Street Building
PORTLAND, MAINE

Design: EAL Scale: NONE
Draft: Date: OCT 2018
Checked: RED File Name: 2866.01 - Revised

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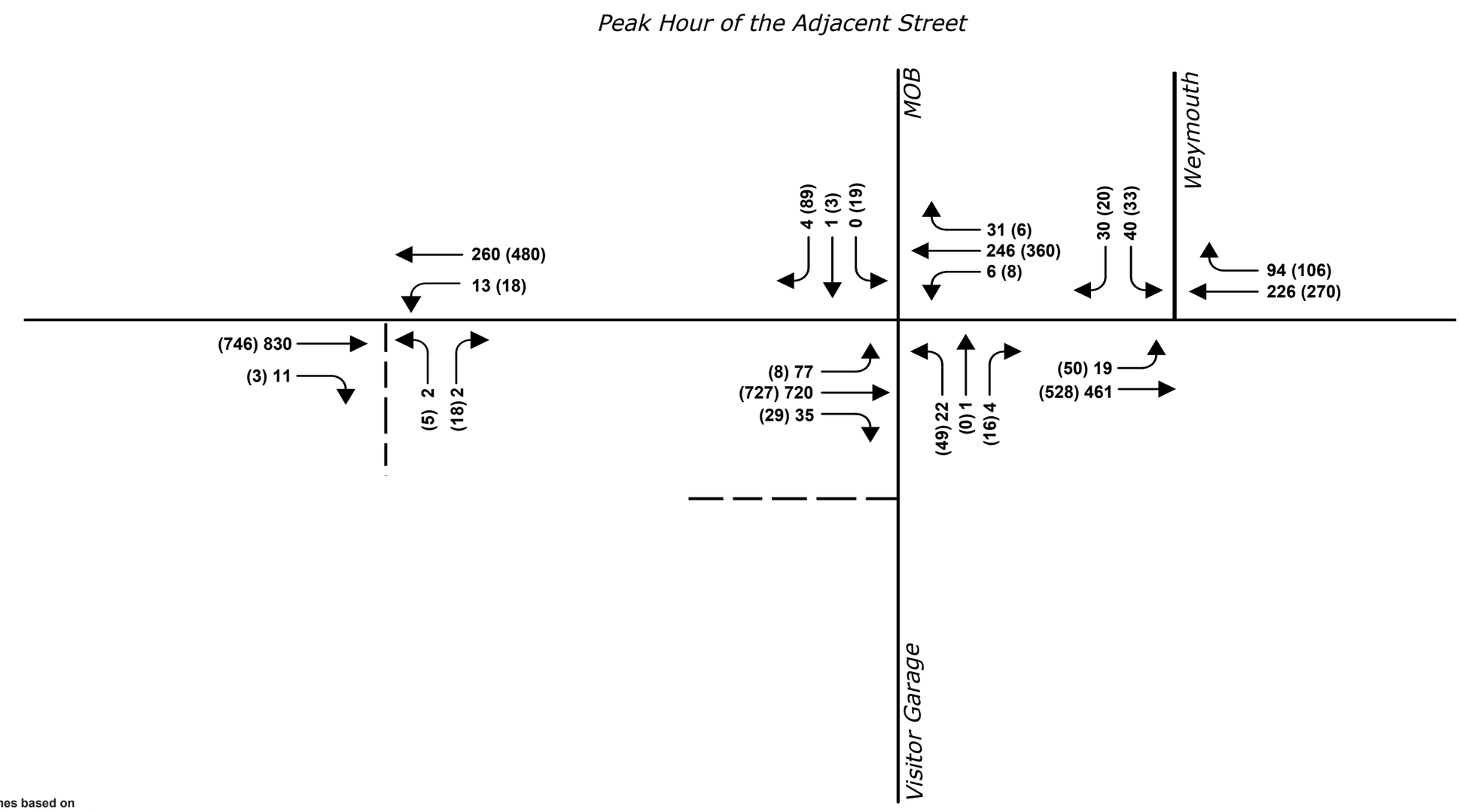
Peak Hour of the Adjacent Street



* Through volumes based on volumes at adjacent intersections.

(S) Proposed Signalized Intersection

(S) Denotes Signalized Intersection

XX = AM Peak Hour of Adjacent Street
(XX) = PM Peak Hour of Adjacent Street

Bramhall St. - 22; MMC Congress Street Building
PORTLAND, MAINE

Design: EAL Scale: NONE
Draft: Date: OCT 2018
Checked: RED File Name: 2866.01 - Revised

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LEGEND

Bramhall Employees	1 mile	Travelshed
<1 mile	3 miles	295 North
1-3 miles	5 miles	35 - 302 - 117 North
3-5 miles	10 miles	95 North
5-10 miles	20 miles	95 South
10-20 miles	30 miles	Ferries
20-30 miles	40 miles	Peninsular Surface Streets
30-40 miles	50 miles	Rt 25 - Brighton Ave
40-50 miles		South Portland Surface Streets
>50 miles		Maine Medical Center

Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

Bramhall Employee Address Locations and Travelsheds
Maine Medical Center

vhb

0 2.5 5 Miles

Attachment 7B

Trip Generation Calculations
May 2013 Traffic Impact Study

JN:	2866.01	Gorrill Palmer
Project Description:	Maine Medical Center Phase 3	707 Sable Oaks Drive
Project Location:	Portland, ME	Suite 30
Date:	08/14/18	South Portland, Maine 04106

Hospital
Land Use Code (LUC) 610

Employees 324

Fitted Curve:

Time Period	ITE Trip Rate	Trip Ends	Directional Split*		Directional Distribution		Sample Size/R2
			IN	OUT	IN	OUT	
Weekday	T =4.40 (X) + 711.46	2137	50%	50%	1069	1068	19/.77
AM Peak Adjacent Street	T =0.32 (X) + 35.15	139	80%	20%	111	28	9/.77
PM Peak Adjacent Street	T =0.28 (X) + 75.75	166	35%	65%	58	108	8/.69
AM Peak of Generator	T = 0.33 (X) +66.57	173	65%	35%	112	61	8/.83
PM Peak of Generator	T = 0..36 (X) + 97.41	214	40%	60%	86	128	15/.73
Saturday	T = 2.95 (X)+ 691.43	1647	50%	50%	824	823	15/.84
Saturday Peak of Generator	Not given	-	55%	45%	-	-	4

* Percentages rounded to nearest 5%

Average Rate:

Time Period	ITE Trip Rate	Trip Ends	Directional Split*		Directional Distribution		Sample Size
			IN	OUT	IN	OUT	
Weekday	**T = 5.2 (X)**	**1685**	**50%**	**50%**	**843**	**842**	**19**
AM Peak Adjacent Street	**T = 0.34 (X)**	**110**	**80%**	**20%**	**88**	**22**	**9**
PM Peak Adjacent Street	**T = 0.33 (X)**	**107**	**35%**	**65%**	**37**	**70**	**8**
AM Peak of Generator	**T = 0.39 (X)**	**126**	**65%**	**35%**	**82**	**44**	**8**
PM Peak of Generator	**T = 0.47 (X)**	**152**	**40%**	**60%**	**61**	**91**	**15**
Saturday	**T = 3.78 (X)**	**1225**	**50%**	**50%**	**613**	**612**	**15**
Saturday Peak of Generator	**T = 0.53 (X)**	**172**	**55%**	**45%**	**95**	**77**	**4**

* Percentages rounded to nearest 5%

Attachment E 1

Traffic Impact Study; Parking Study and Transportation Demand Management Plan
Proposed Bean 2 Roof Addition
Maine Medical Center - Bramhall Campus
Portland, Maine

Prepared for:

Maine Medical Center
22 Bramhall Street
Portland, Maine 04102

May 2013

Prepared by:

Gorrill-Palmer Consulting Engineers, Inc.

Engineering Excellence Since 1998

PO Box 1237
15 Shaker Road
Gray, ME 04039

(207) 657-6910
Fax: (207) 657-6912
E-mail: mailbox@gorrillpalmer.com

E.2

Traffic Impact, Parking Study and Transportation Demand Management Plan
Bean 2 Roof Addition
Maine Medical Center Bramhall Campus
Portland, Maine

Index

Section	*Description*	*Page*
	Executive Summary	1
I.	Existing and Proposed Site	2
II.	Background Traffic Conditions	2-3
III.	Trip Generation	3
IV.	Crash Data	7-8
V.	Parking Evaluation	8
VI.	Transportation Demand Management Plan	9

Appendix

Maine DOT Crash Data
Trip Generation Calculations

E.3

Executive Summary

The following Executive Summary is prepared for the reader's convenience, but is not intended to be a substitute for reading the full report.

Gorrill-Palmer Consulting Engineers, Inc. was retained by Maine Medical Center (MMC) to prepare this traffic and parking assessment as well as a Transportation Demand Management Plan Review for the proposed addition to the Bean 2 building at their Bramhall campus in Portland, Maine. Proposed for the site is a 18,758 square foot addition on top of the Bean 2 building. A total of 49 staff will be added as a result of the project. Based on MMC records, a total of 184 staff have been added since the previous expansion of the Bramhall campus. The additional parking demand for the 49 employees is forecast to be 41 spaces and MMC plans to accommodate them at their parking facilities at 887 Congress Street and at 995 Congress Street.

Based on this study, our office has determined the following:

1. The proposed development is forecast to generate 28 and 30 trip ends in the weekday AM and PM peak hours respectively. The increase since the previous project is estimated to be 77 and 84 trip ends in the weekday AM and PM peak hours respectively (Note: A trip end is either a trip in or out of the site. Thus a round trip would equal two trip ends). At this level of trip generation, this project does not require a traffic permit from the Maine Department of Transportation.

2. Gorrill-Palmer Consulting Engineers, Inc. referenced the Maine DOT collision records to determine that are five high crash locations in the vicinity of the project.

3. Gorrill-Palmer Consulting Engineers, Inc. estimates that the additional 49 employees will generate a demand for 41 parking spaces. It is our understanding from MMC that this additional demand can be accommodated at 887 Congress Street and at 995 Congress Street.

4. Maine Medical Center has a comprehensive Demand Management Plan for their Bramhall campus which supports the City's transportation and environmental sustainability goals by encouraging and promoting bicycling, walking, and use of transit. MMC is planning to add two additional bike racks which will accommodate up to 36 bikes as well as a parking space for a U-Share car on the Bramhall campus.

Based on these findings, it is the opinion of Gorrill-Palmer Consulting Engineers, Inc. that the proposed project can be accommodated by the City's transportation system.

E.4

I. *Existing and Proposed Site*

The proposed project consists of an addition to the top of the existing Bean 2 building at Maine Medical Center's (MMC) Bramhall campus in Portland, Maine.

Proposed for the site is a 18,758 sf addition which is forecast by MMC to add 49 employees. MMC estimates that they have added approximately 184 employees since the last major addition to the Bramhall Campus.

II. *Background Conditions*

Gorrill-Palmer Consulting Engineers, Inc. based the study on the following information:

- A site plan, Sheet A01-01 prepared by Perkins + Will dated April 3, 2013.
- Crash data for 2009-2011 provided by the Maine Department of Transportation.

III. *Trip Generation*

Gorrill-Palmer Consulting Engineers, Inc. used the Institute of Transportation Engineers (ITE) publication *Trip Generation*, 7th Edition, to estimate the potential trip generation for the proposed expansion. Based on MMC records, a total of 184 staff have been added since the previous expansion of the Bramhall campus. With the planned staff addition of 49 employees associated with this project, the total additional staff is 233 since the previous expansion resulting in a total staff level of 4,804 following the expansion. Based on Land Use Code (LUC) 610, Hospital, Gorrill-Palmer Consulting Engineers, Inc. has estimated the difference in trip ends using the prior employee level of 4,571 and the post development level of 4804 (Note a trip end is either a trip in or out of the site; thus one round trip is equal to two trip ends):

AM Peak Hour of MMC	77 trip ends
PM Peak Hour of MMC	84 trip ends

Maine Medical received a traffic movement permit for their previous expansion. The level of forecast traffic increase associated with the employee increase since that time does not require a traffic movement permit from the MaineDOT since the peak hour traffic increase is less than 100 trip ends.

IV. *Crash Data*

In order to evaluate whether a location has a crash problem, Maine DOT uses two criteria to define High Crash Locations (HCL). Both criteria must be met in order to be classified as an HCL.

E. 5

1. A critical rate factor of 1.00 or more for a three-year period. (A Critical Rate Factor (CRF) compares the actual accident rate to the rate for similar intersections in the State. A CRF of less than 1.00 indicates a rate less than average) and:

2. A minimum of 8 crashes over a three-year period.

Our office reviewed the 2009-2011 crash data in this area and has summarized the high crash locations or areas which are close to meeting that definition below:

Intersections with Significant Collision History

Location	No. of Collisions	Critical Rate Factor
Congress/Gilman	10	1.89
Bramhall/Congress/Deering	17	0.64
Congress/Valley	28	1.31
Congress/St. John	24	0.75

Roadway Segment with Significant Collision History

Location	No. of Collisions	Critical Rate Factor
Congress between Ellsworth and Weymouth	10	1.52
Congress between Weymouth and Forest St	10	1.50
St. John between C St and A St	11	2.68

This information shows that there are five high crash locations in the vicinity of the site. The MaineDOT furnished the collision reports for these locations and our office is preparing the collision diagrams which will be furnished to the City upon completion.

A copy of the collision history is included in the appendix.

V. *Parking Demand*

Gorrill-Palmer Consulting Engineers, Inc. used the Institute of Transportation Engineers (ITE) publication *Parking Generation*, 3rd Edition, to estimate the potential parking demand for the proposed expansion. Land Use Code 610, Hospital, estimates an average demand of 0.83 spaces per employee. Based on the estimated 49 employees to be added with the planned addition, the project will create a demand for 41 additional parking spaces. It is our understanding from MMC that this additional demand can be accommodated at 887 Cougress Street and at 995 Congress Street.

It is our understanding from John Peverada of the City's parking department staff that, they have done periodic checking of MMC's parking garages at the corner of Gilman Road and Congress Street and has seen vacancies. He also observed that the parking meeting on the Eastern Promenade were underutilized.

Attachment 7C

Capacity and Queuing Analysis Results

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	6947	6977	6925	6869	6923	6930
Vehs Exited	6842	6910	6872	6820	6913	6872
Starting Vehs	232	227	223	203	228	215
Ending Vehs	337	294	276	252	238	278
Denied Entry Before	4	4	0	2	10	2
Denied Entry After	1	1	0	1	1	0
Travel Distance (mi)	5039	5044	5012	4979	5055	5026
Travel Time (hr)	288.9	279.2	270.3	260.6	263.2	272.4
Total Delay (hr)	107.6	97.5	89.6	82.0	81.0	91.5
Total Stops	8886	8728	8375	8046	8138	8433
Fuel Used (gal)	188.6	187.1	183.0	181.5	183.0	184.6

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	6947	6977	6925	6869	6923	6930
Vehs Exited	6842	6910	6872	6820	6913	6872
Starting Vehs	232	227	223	203	228	215
Ending Vehs	337	294	276	252	238	278
Denied Entry Before	4	4	0	2	10	2
Denied Entry After	1	1	0	1	1	0
Travel Distance (mi)	5039	5044	5012	4979	5055	5026
Travel Time (hr)	288.9	279.2	270.3	260.6	263.2	272.4
Total Delay (hr)	107.6	97.5	89.6	82.0	81.0	91.5
Total Stops	8886	8728	8375	8046	8138	8433
Fuel Used (gal)	188.6	187.1	183.0	181.5	183.0	184.6

1: St. John Street & Margaritas Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	2.1	0.0	0.0	0.1
Total Del/Veh (s)	5.3	1.2	1.6	1.6
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

3: St. John Street & Garage Access/D St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.0
Total Del/Veh (s)	6.1	4.5	1.9	0.9	1.4
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

5: Valley & St. John Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	2.8	0.0	2.3	0.9
Total Del/Veh (s)	11.7	17.4	14.4	14.8	14.8
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

7: St. John Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.4	0.2	0.8	0.0	0.4
Total Del/Veh (s)	15.9	10.9	28.9	22.2	18.3
Denied Entry Before	1	0	0	0	1
Denied Entry After	0	0	0	0	0

9: Valley Street & Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	2.6	0.2
Total Del/Veh (s)	1.9	0.6	10.7	2.3
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

13: Fore River Pkwy & Valley Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.4	0.0	0.3
Total Del/Veh (s)	66.9	18.6	11.3	42.8
Denied Entry Before	1	0	0	1
Denied Entry After	0	0	0	0

19: St. John Street & Park Avenue Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	1.1	0.0	0.9	0.6
Total Del/Veh (s)	28.7	20.8	69.7	37.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

24: Gilman Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.4	0.0	0.2	0.1	0.3
Total Del/Veh (s)	1.7	3.2	18.7	8.6	3.7
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

29: Bramhall Street/Deering Avenue & Congress Street Performance by approach

Approach	EB	WB	NE	SW	All
Denied Del/Veh (s)	0.0	1.9	2.3	2.9	1.2
Total Del/Veh (s)	7.8	13.3	13.2	11.7	10.4
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

35: Visitor Garage/Forest Street Garage & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	2.8	2.0	18.7	6.3	3.0
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	45.1
Denied Entry Before	2
Denied Entry After	0

Intersection: 1: St. John Street & Margaritas

Movement	EB	EB	NB
Directions Served	L	R	LT
Maximum Queue (ft)	35	30	49
Average Queue (ft)	9	7	6
95th Queue (ft)	32	27	30
Link Distance (ft)	626		678
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		125	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: St. John Street & Garage Access/D St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	24	35	10	33
Average Queue (ft)	2	12	1	3
95th Queue (ft)	15	36	8	18
Link Distance (ft)	570	495	1618	678
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Valley & St. John Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	LT	TR
Maximum Queue (ft)	123	121	282	61	170	273	62	86
Average Queue (ft)	45	58	142	18	68	150	23	32
95th Queue (ft)	90	100	242	46	132	244	55	68
Link Distance (ft)	1618			1012	268	268	937	
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						1		
Storage Bay Dist (ft)		110	335					265
Storage Blk Time (%)	0	0	0					
Queuing Penalty (veh)	1	0	0					

Intersection: 7: St. John Street & Congress Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	R	T	TR	L	T
Maximum Queue (ft)	253	374	313	75	108	111	147	150	202
Average Queue (ft)	114	209	53	27	58	49	64	74	88
95th Queue (ft)	199	335	165	64	97	89	114	133	170
Link Distance (ft)	1767	1767			170	670		794	794
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			290	80			175		
Storage Blk Time (%)		2	0	0	2		0		
Queuing Penalty (veh)		3	0	0	1		0		

Intersection: 9: Valley Street & Congress Street

Movement	EB	EB	WB	WB	NB	NB
Directions Served	L	TR	L	TR	LT	R
Maximum Queue (ft)	24	8	29	8	77	59
Average Queue (ft)	1	0	4	0	25	29
95th Queue (ft)	10	4	19	4	56	55
Link Distance (ft)		170		125	435	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	50		50			170
Storage Blk Time (%)			0			
Queuing Penalty (veh)			0			

Intersection: 13: Fore River Pkwy & Valley

Movement	EB	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	L	L	T	T	T	T	R	L	R	R
Maximum Queue (ft)	480	530	1285	1237	214	215	97	120	142	146
Average Queue (ft)	391	454	640	511	131	122	39	64	71	71
95th Queue (ft)	629	637	1521	1418	188	187	79	105	115	116
Link Distance (ft)			2719	2719	1454	1454		268	268	268
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	430	430					415			
Storage Blk Time (%)	9	52	4							
Queuing Penalty (veh)	45	262	25							

Intersection: 19: St. John Street & Park Avenue

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	158	228	281	195	349	135	772	80
Average Queue (ft)	58	116	144	96	156	92	393	65
95th Queue (ft)	123	199	221	157	274	162	740	105
Link Distance (ft)			1678	794	794		2253	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	95	95				110		55
Storage Blk Time (%)	2	7	24		17	0	58	7
Queuing Penalty (veh)	6	22	83		41	1	97	27

Intersection: 24: Gilman Street & Congress Street

Movement	EB	WB	WB	NB	SB
Directions Served	TR	L	T	LTR	LTR
Maximum Queue (ft)	70	73	34	129	46
Average Queue (ft)	8	28	1	55	15
95th Queue (ft)	41	62	24	99	42
Link Distance (ft)	125		425	1063	624
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)		65			
Storage Blk Time (%)		1			
Queuing Penalty (veh)		3			

Intersection: 29: Bramhall Street/Deering Avenue & Congress Street

Movement	EB	EB	WB	WB	NE	NE	SW	SW
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	58	230	184	90	125	148	144	75
Average Queue (ft)	18	112	47	68	48	67	43	47
95th Queue (ft)	46	187	135	102	98	124	104	81
Link Distance (ft)	965		1272		1186		795	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		400		65		135		50
Storage Blk Time (%)			0	10	0	1	4	9
Queuing Penalty (veh)			1	4	0	1	7	6

Intersection: 35: Visitor Garage/Forest Street Garage & Congress Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	184	52	57	30
Average Queue (ft)	28	5	23	5
95th Queue (ft)	99	27	51	23
Link Distance (ft)	425	965	508	434
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 635

Intersection: 5: Valley & St. John Street

Phase	2	3	4	6	8
Movement(s) Served	NBTL	WBL	EBTL	SBTL	WBT
Maximum Green (s)	34.0	23.0	18.0	34.0	46.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	None	None	None	None	None
Avg. Green (s)	14.7	16.2	9.7	14.7	27.2
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	6	8	25	6	4
Cycles @ Minimum (%)	1	0	4	1	0
Cycles Maxed Out (%)	0	23	5	0	3
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 7: St. John Street & Congress Street

Phase	1	2	3	4	5	6	8
Movement(s) Served	EBL	WBL	SBL	NBT	WBL	EBTL	SBT
Maximum Green (s)	15.3	27.2	6.7	8.0	5.0	37.5	21.5
Minimum Green (s)	8.0	8.0	3.0	8.0	5.0	8.0	5.0
Recall	None	Min	None	None	None	Min	None
Avg. Green (s)	13.2	16.1	6.9	8.5	5.7	30.4	20.2
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01	NA	NA
Cycles Skipped (%)	7	0	11	4	73	0	0
Cycles @ Minimum (%)	9	30	0	91	25	0	0
Cycles Maxed Out (%)	46	16	76	96	27	32	73
Cycles with Peds (%)	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 13: Fore River Pkwy & Valley

Phase	4	6	7	8
Movement(s) Served	EBT	SBL	EBL	WBT
Maximum Green (s)	39.0	11.0	17.0	17.0
Minimum Green (s)	5.0	5.0	5.0	5.0
Recall	None	None	None	None
Avg. Green (s)	38.8	10.3	17.2	16.1
g/C Ratio	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	2	0	0
Cycles Maxed Out (%)	70	74	100	70
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 19: St. John Street & Park Avenue

Phase	2	6	8
Movement(s) Served	NBTL	SBTL	WBTL
Maximum Green (s)	40.0	25.0	40.0
Minimum Green (s)	3.0	3.0	3.0
Recall	Min	Min	Min
Avg. Green (s)	26.8	23.8	24.7
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	18	80	5
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 29: Bramhall Street/Deering Avenue & Congress Street

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	SWL	NETL	WBL	EBTL	NEL	SWTL	EBL	WBTL
Maximum Green (s)	5.5	13.5	5.5	17.5	5.5	13.5	5.5	17.5
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall	None	Max	None	None	None	Max	None	None
Avg. Green (s)	5.5	15.1	6.2	14.6	5.5	16.0	7.0	15.1
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	60	0	76	3	67	1	80	4
Cycles @ Minimum (%)	1	0	14	0	10	0	0	0
Cycles Maxed Out (%)	36	100	9	43	22	99	19	40
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	7632	7914	7627	7761	7867	7755
Vehs Exited	7599	7872	7612	7729	7820	7726
Starting Vehs	235	271	269	258	255	257
Ending Vehs	268	313	284	290	302	291
Denied Entry Before	4	1	2	2	1	1
Denied Entry After	1	1	1	0	0	1
Travel Distance (mi)	5439	5690	5411	5540	5602	5536
Travel Time (hr)	269.3	290.7	266.2	279.4	280.0	277.1
Total Delay (hr)	72.4	84.9	70.1	79.2	77.2	76.8
Total Stops	8933	9630	8712	9256	9263	9156
Fuel Used (gal)	196.3	206.9	194.3	201.3	201.9	200.1

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	7632	7914	7627	7761	7867	7755
Vehs Exited	7599	7872	7612	7729	7820	7726
Starting Vehs	235	271	269	258	255	257
Ending Vehs	268	313	284	290	302	291
Denied Entry Before	4	1	2	2	1	1
Denied Entry After	1	1	1	0	0	1
Travel Distance (mi)	5439	5690	5411	5540	5602	5536
Travel Time (hr)	269.3	290.7	266.2	279.4	280.0	277.1
Total Delay (hr)	72.4	84.9	70.1	79.2	77.2	76.8
Total Stops	8933	9630	8712	9256	9263	9156
Fuel Used (gal)	196.3	206.9	194.3	201.3	201.9	200.1

1: St. John Street & Margaritas Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	3.3	0.0	0.0	0.2
Total Del/Veh (s)	8.2	3.1	2.2	2.9
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

3: St. John Street & Garage Access/D St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.5	0.1	0.5	0.1	0.5
Total Del/Veh (s)	16.4	5.0	6.5	7.3	8.6
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

5: Valley & St. John Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	2.7	0.0	1.7	0.8
Total Del/Veh (s)	13.0	16.3	13.5	18.2	14.3
Denied Entry Before	0	1	0	0	1
Denied Entry After	0	1	0	0	1

7: St. John Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.6	0.3	0.3	0.0	0.4
Total Del/Veh (s)	20.2	14.5	31.5	25.0	22.6
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

12: Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	1.3	1.7	23.4	1.9
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

13: Fore River Pkwy & Valley Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.4	0.0	0.3
Total Del/Veh (s)	24.7	18.1	11.9	20.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

16: Valley & Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	2.7	0.2
Total Del/Veh (s)	1.9	1.1	10.4	2.3
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

19: St. John Street & Park Avenue Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	1.3	0.0	0.7	0.6
Total Del/Veh (s)	33.7	18.7	24.8	25.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

24: Gilman Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.3	0.0	0.2	0.1	0.2
Total Del/Veh (s)	1.2	1.2	13.1	12.3	2.0
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

29: Bramhall Street/Deering Avenue & Congress Street Performance by approach

Approach	EB	WB	NE	SW	All
Denied Del/Veh (s)	0.0	1.9	2.3	2.9	1.3
Total Del/Veh (s)	8.2	13.4	13.8	12.0	10.8
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

35: Visitor Garage/Forest Street Garage & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1	0.1
Total Del/Veh (s)	2.0	2.0	16.9	7.5	2.4
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	33.4
Denied Entry Before	1
Denied Entry After	1

Intersection: 1: St. John Street & Margaritas

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	39	59	134	26
Average Queue (ft)	13	28	34	1
95th Queue (ft)	38	52	96	12
Link Distance (ft)	620		678	670
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		125		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: St. John Street & Garage Access/D St

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	178	118	34	80	149	98	206
Average Queue (ft)	76	36	9	26	58	23	88
95th Queue (ft)	145	80	31	54	116	60	157
Link Distance (ft)	564		489		1605		678
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		150		100		75	
Storage Blk Time (%)	1	0		0	1	0	6
Queuing Penalty (veh)	1	0		0	0	0	3

Intersection: 5: Valley & St. John Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	LT	TR
Maximum Queue (ft)	169	128	257	56	188	253	62	48
Average Queue (ft)	58	71	130	22	88	133	15	14
95th Queue (ft)	117	116	212	50	157	224	46	42
Link Distance (ft)	1605			1012	268	268	937	
Upstream Blk Time (%)					0	0		
Queuing Penalty (veh)					0	0		
Storage Bay Dist (ft)		110	335					265
Storage Blk Time (%)	1	1						
Queuing Penalty (veh)	2	1						

Intersection: 7: St. John Street & Congress Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	R	T	TR	L	T
Maximum Queue (ft)	322	529	315	86	116	225	191	132	252
Average Queue (ft)	137	239	137	40	56	94	112	58	134
95th Queue (ft)	245	405	295	78	95	173	174	110	218
Link Distance (ft)	1767	1767			171	670		794	794
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			290	80			175		
Storage Blk Time (%)		4	0	1	2	1	1		
Queuing Penalty (veh)		13	0	2	1	2	1		

Intersection: 12: Congress Street

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	42	130	61
Average Queue (ft)	2	21	25
95th Queue (ft)	17	82	54
Link Distance (ft)	169	202	174
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: Fore River Pkwy & Valley

Movement	EB	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	L	L	T	T	T	T	R	L	R	R
Maximum Queue (ft)	401	450	402	308	230	214	98	130	143	147
Average Queue (ft)	180	254	108	110	131	116	42	64	74	78
95th Queue (ft)	393	434	326	262	191	184	81	112	119	126
Link Distance (ft)			2719	2719	1454	1454		268	268	268
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	430	430					415			
Storage Blk Time (%)	0	4	0							
Queuing Penalty (veh)	2	20	1							

Intersection: 16: Valley & Congress Street

Movement	EB	EB	WB	WB	NB	NB
Directions Served	L	TR	L	TR	LT	R
Maximum Queue (ft)	24	23	52	7	59	76
Average Queue (ft)	2	1	16	0	23	30
95th Queue (ft)	12	10	41	5	52	59
Link Distance (ft)		171		124	315	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	50		50			170
Storage Blk Time (%)		0	0	0		
Queuing Penalty (veh)		0	1	0		

Intersection: 19: St. John Street & Park Avenue

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	163	223	299	225	341	135	386	80
Average Queue (ft)	75	117	148	96	158	103	193	64
95th Queue (ft)	140	200	229	171	288	164	330	104
Link Distance (ft)			1678	794	794		2255	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	95	95				110		55
Storage Blk Time (%)	4	13	32		14	1	38	5
Queuing Penalty (veh)	12	39	121		40	4	63	20

Intersection: 24: Gilman Street & Congress Street

Movement	EB	WB	NB	SB
Directions Served	TR	L	LTR	LTR
Maximum Queue (ft)	53	60	80	56
Average Queue (ft)	5	14	37	16
95th Queue (ft)	28	42	69	46
Link Distance (ft)	124		1063	624
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		65		
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Intersection: 29: Bramhall Street/Deering Avenue & Congress Street

Movement	EB	EB	WB	WB	NE	NE	SW	SW
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	54	236	193	90	146	150	173	75
Average Queue (ft)	18	109	46	71	46	65	47	49
95th Queue (ft)	48	200	131	102	98	121	117	82
Link Distance (ft)	965		1272		1186		795	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		400		65		135		50
Storage Blk Time (%)		0	0	12	0	1	4	10
Queuing Penalty (veh)		0	1	4	0	1	7	7

Intersection: 35: Visitor Garage/Forest Street Garage & Congress Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	176	61	52	30
Average Queue (ft)	33	6	19	4
95th Queue (ft)	106	31	47	21
Link Distance (ft)	202	965	508	434
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 372

Intersection: 3: St. John Street & Garage Access/D St

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	45.0	5.0	6.5	34.0	5.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	Min	None	None	Min	None
Avg. Green (s)	26.9	5.0	5.9	21.8	5.0
g/C Ratio	-0.01	-0.01	-0.01	NA	-0.01
Cycles Skipped (%)	7	7	70	0	7
Cycles @ Minimum (%)	0	93	4	1	93
Cycles Maxed Out (%)	8	93	9	19	93
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Valley & St. John Street

Phase	2	3	4	6	8
Movement(s) Served	NBTL	WBL	EBTL	SBTL	WBT
Maximum Green (s)	26.0	21.0	18.0	26.0	44.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	None	None	None	None	None
Avg. Green (s)	14.2	15.8	11.3	14.2	31.4
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	9	3	9	9	4
Cycles @ Minimum (%)	0	0	3	0	0
Cycles Maxed Out (%)	4	34	15	4	10
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 7: St. John Street & Congress Street

Phase	1	2	3	4	5	6	8
Movement(s) Served	EBL	WBL	SBL	NBT	WBL	EBTL	SBT
Maximum Green (s)	15.6	24.4	5.7	11.5	5.0	35.0	24.0
Minimum Green (s)	8.0	8.0	3.0	8.0	5.0	8.0	5.0
Recall	None	Min	None	None	None	Min	None
Avg. Green (s)	13.9	19.5	5.8	12.7	5.1	33.1	23.0
g/C Ratio	-0.01	NA	-0.01	NA	-0.01	NA	NA
Cycles Skipped (%)	2	0	14	0	47	0	0
Cycles @ Minimum (%)	4	8	0	2	51	0	0
Cycles Maxed Out (%)	53	40	80	90	53	65	74
Cycles with Peds (%)	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 13: Fore River Pkwy & Valley

Phase	4	6	7	8
Movement(s) Served	EBT	SBL	EBL	WBT
Maximum Green (s)	39.0	11.0	17.0	17.0
Minimum Green (s)	5.0	5.0	5.0	5.0
Recall	None	None	None	None
Avg. Green (s)	38.0	10.4	16.5	15.9
g/C Ratio	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	61	77	89	68
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 19: St. John Street & Park Avenue

Phase	2	6	8
Movement(s) Served	NBTL	SBTL	WBTL
Maximum Green (s)	15.0	20.0	10.0
Minimum Green (s)	3.0	3.0	3.0
Recall	Min	Min	Min
Avg. Green (s)	14.6	18.0	10.1
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	85	66	100
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 29: Bramhall Street/Deering Avenue & Congress Street

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	SWL	NETL	WBL	EBTL	NEL	SWTL	EBL	WBTL
Maximum Green (s)	5.5	13.5	5.5	17.5	5.5	13.5	5.5	17.5
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall	None	Max	None	None	None	Max	None	None
Avg. Green (s)	5.5	15.0	6.3	14.8	5.5	16.1	7.1	14.9
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	57	1	79	4	68	1	79	5
Cycles @ Minimum (%)	1	0	13	0	9	0	0	0
Cycles Maxed Out (%)	40	99	8	39	22	99	19	35
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	7682	7651	7598	7731	7600	7657
Vehs Exited	7645	7567	7573	7625	7538	7592
Starting Vehs	248	218	214	204	199	214
Ending Vehs	285	302	239	310	261	275
Denied Entry Before	1	1	3	2	4	1
Denied Entry After	2	3	3	2	1	0
Travel Distance (mi)	4667	4646	4616	4702	4654	4657
Travel Time (hr)	281.7	274.7	265.6	260.6	267.2	270.0
Total Delay (hr)	111.9	106.1	97.4	89.4	97.7	100.5
Total Stops	9887	9581	9407	9326	9442	9529
Fuel Used (gal)	182.3	180.1	176.8	177.1	178.0	178.9

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	7682	7651	7598	7731	7600	7657
Vehs Exited	7645	7567	7573	7625	7538	7592
Starting Vehs	248	218	214	204	199	214
Ending Vehs	285	302	239	310	261	275
Denied Entry Before	1	1	3	2	4	1
Denied Entry After	2	3	3	2	1	0
Travel Distance (mi)	4667	4646	4616	4702	4654	4657
Travel Time (hr)	281.7	274.7	265.6	260.6	267.2	270.0
Total Delay (hr)	111.9	106.1	97.4	89.4	97.7	100.5
Total Stops	9887	9581	9407	9326	9442	9529
Fuel Used (gal)	182.3	180.1	176.8	177.1	178.0	178.9

1: St. John Street & Margaritas Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	1.6	0.0	0.0	0.3
Total Del/Veh (s)	8.3	1.3	1.8	2.8
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

3: St. John Street & Garage Access/D St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	0.1
Total Del/Veh (s)	6.1	3.2	2.0	0.9	1.4
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

5: Valley & St. John Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	2.7	0.0	2.1	1.1
Total Del/Veh (s)	10.6	19.7	12.6	17.3	14.9
Denied Entry Before	0	1	0	0	1
Denied Entry After	0	0	0	0	0

7: St. John Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.4	0.2	0.9	0.0	0.4
Total Del/Veh (s)	16.9	13.0	25.6	21.9	19.0
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

9: Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	1.8	0.2
Total Del/Veh (s)	1.9	1.0	12.9	2.7
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

12: Gilman Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.2	0.1	0.1
Total Del/Veh (s)	1.2	2.5	54.6	10.9	7.6
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

13: Fore River Pkwy & Valley Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.9	0.3	0.0	0.4
Total Del/Veh (s)	78.2	18.6	12.4	39.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

18: Bramhall Street/Deering Avenue & Congress Street Performance by approach

Approach	EB	WB	NE	SW	All
Denied Del/Veh (s)	0.0	1.5	2.7	3.1	1.5
Total Del/Veh (s)	15.4	24.3	14.8	15.7	16.7
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

19: St. John Street & Park Avenue Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	1.6	0.1	0.8	0.8
Total Del/Veh (s)	35.9	35.7	41.1	36.6
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

32: Visitor Garage/Forest Street Garage & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1	0.1
Total Del/Veh (s)	1.5	1.7	14.7	7.8	2.7
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	1.3
Total Del/Veh (s)	44.7
Denied Entry Before	1
Denied Entry After	0

Intersection: 1: St. John Street & Margaritas

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	108	80	54	4
Average Queue (ft)	43	30	10	0
95th Queue (ft)	82	60	39	3
Link Distance (ft)	424		678	671
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		125		
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	0	0		

Intersection: 3: St. John Street & Garage Access/D St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	31	31	42	48
Average Queue (ft)	3	17	2	3
95th Queue (ft)	19	41	18	23
Link Distance (ft)	436	550	1618	678
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Valley & St. John Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	LT	TR
Maximum Queue (ft)	142	130	267	71	143	160	105	160
Average Queue (ft)	39	75	160	24	54	83	37	68
95th Queue (ft)	88	122	255	58	111	145	81	128
Link Distance (ft)	1618			988	263	263	1083	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		110	335					265
Storage Blk Time (%)	0	2						
Queuing Penalty (veh)	0	2						

Intersection: 7: St. John Street & Congress Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	R	T	TR	L	T
Maximum Queue (ft)	219	366	219	104	166	215	192	122	241
Average Queue (ft)	119	191	50	33	81	91	101	55	111
95th Queue (ft)	193	311	136	80	134	160	163	106	201
Link Distance (ft)	1767	1767			166	671		792	792
Upstream Blk Time (%)					0				
Queuing Penalty (veh)					1				
Storage Bay Dist (ft)			290	80			175		
Storage Blk Time (%)		1	0	0	10	0	1		
Queuing Penalty (veh)		2	0	1	4	1	1		

Intersection: 9: Congress Street

Movement	EB	EB	WB	WB	NB	NB
Directions Served	L	TR	L	TR	LT	R
Maximum Queue (ft)	25	21	40	24	90	78
Average Queue (ft)	2	1	12	1	42	32
95th Queue (ft)	14	8	35	12	76	61
Link Distance (ft)		166		130	294	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	50		50			170
Storage Blk Time (%)			0	0		
Queuing Penalty (veh)			1	0		

Intersection: 12: Gilman Street & Congress Street

Movement	EB	WB	WB	NB	SB
Directions Served	TR	L	T	LTR	LTR
Maximum Queue (ft)	45	82	53	244	69
Average Queue (ft)	5	36	2	100	24
95th Queue (ft)	27	71	27	198	55
Link Distance (ft)	130		425	1063	624
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		65			
Storage Blk Time (%)		2			
Queuing Penalty (veh)		8			

Intersection: 13: Fore River Pkwy & Valley

Movement	EB	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	L	L	T	T	T	T	R	L	R	R
Maximum Queue (ft)	478	514	1022	935	252	251	62	125	148	160
Average Queue (ft)	361	423	503	436	156	144	25	64	88	95
95th Queue (ft)	624	636	1221	1128	223	219	57	113	136	140
Link Distance (ft)			1529	1529	1274	1274		263	263	263
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	430	430					415			
Storage Blk Time (%)	12	47	5							
Queuing Penalty (veh)	39	156	26							

Intersection: 18: Bramhall Street/Deering Avenue & Congress Street

Movement	EB	EB	WB	WB	NE	NE	SW	SW
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	134	247	226	90	153	158	270	76
Average Queue (ft)	67	131	82	72	37	90	118	69
95th Queue (ft)	116	211	176	101	101	150	234	85
Link Distance (ft)	965		1272		1186		795	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		400		65		135		50
Storage Blk Time (%)			8	14		2	5	29
Queuing Penalty (veh)			14	14		1	22	26

Intersection: 19: St. John Street & Park Avenue

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	164	235	502	461	544	135	397	80
Average Queue (ft)	101	189	243	237	329	110	188	55
95th Queue (ft)	181	272	408	403	506	181	337	102
Link Distance (ft)			1640	792	792		1989	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	95	95				110		55
Storage Blk Time (%)	9	25	41		44	0	47	3
Queuing Penalty (veh)	41	108	214		93	2	51	8

Intersection: 32: Visitor Garage/Forest Street Garage & Congress Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	53	70	92	85
Average Queue (ft)	4	8	34	38
95th Queue (ft)	30	39	69	67
Link Distance (ft)	425	965	508	434
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 833

Intersection: 5: Valley & St. John Street

Phase	2	3	4	6	8
Movement(s) Served	NBTL	WBL	EBTL	SBTL	WBT
Maximum Green (s)	18.0	19.0	18.0	18.0	42.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	None	None	None	None	None
Avg. Green (s)	14.5	15.9	11.2	14.5	29.2
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	3	1	19	3	1
Cycles @ Minimum (%)	0	0	3	0	0
Cycles Maxed Out (%)	37	51	13	37	7
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 7: St. John Street & Congress Street

Phase	1	2	3	4	5	6	8
Movement(s) Served	EBL	WBL	SBL	NBT	WBL	EBTL	SBT
Maximum Green (s)	13.7	33.2	5.7	14.6	4.5	42.4	27.1
Minimum Green (s)	8.0	8.0	3.0	8.0	4.5	8.0	5.0
Recall	None	Min	None	None	None	Min	None
Avg. Green (s)	12.2	14.9	5.7	14.0	5.2	28.2	25.1
g/C Ratio	-0.01	NA	-0.01	NA	-0.01	NA	NA
Cycles Skipped (%)	4	0	11	0	67	0	0
Cycles @ Minimum (%)	8	38	0	2	27	0	0
Cycles Maxed Out (%)	53	4	83	70	33	9	58
Cycles with Peds (%)	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 13: Fore River Pkwy & Valley

Phase	4	6	7	8
Movement(s) Served	EBT	SBL	EBL	WBT
Maximum Green (s)	34.0	11.0	11.0	18.0
Minimum Green (s)	5.0	5.0	5.0	5.0
Recall	None	None	None	None
Avg. Green (s)	33.6	10.9	11.0	17.7
g/C Ratio	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	86	92	100	88
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 18: Bramhall Street/Deering Avenue & Congress Street

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	SWL	NETL	WBL	EBTL	NEL	SWTL	EBL	WBTL
Maximum Green (s)	5.5	18.5	5.5	12.5	5.5	18.5	7.5	10.5
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall	None	Max	None	None	None	Max	None	None
Avg. Green (s)	5.6	19.7	6.0	13.8	5.5	23.1	8.9	12.0
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01	NA	-0.01	-0.01
Cycles Skipped (%)	42	0	31	3	75	0	20	14
Cycles @ Minimum (%)	0	0	12	0	5	0	0	0
Cycles Maxed Out (%)	57	100	54	74	19	100	58	65
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 19: St. John Street & Park Avenue

Phase	2	6	8
Movement(s) Served	NBTL	SBTL	WBTL
Maximum Green (s)	40.0	25.0	40.0
Minimum Green (s)	3.0	3.0	3.0
Recall	Min	Min	Min
Avg. Green (s)	39.1	20.7	35.8
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	78	42	44
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	8257	8173	8185	8369	8153	8227
Vehs Exited	8226	8128	8116	8278	8138	8177
Starting Vehs	243	260	247	199	236	229
Ending Vehs	274	305	316	290	251	282
Denied Entry Before	1	7	0	5	2	1
Denied Entry After	2	2	4	0	3	0
Travel Distance (mi)	4961	4880	4859	5016	4897	4922
Travel Time (hr)	277.1	280.2	274.8	278.3	273.4	276.8
Total Delay (hr)	96.2	101.9	97.4	94.8	94.4	96.9
Total Stops	10807	10700	10600	10991	10575	10732
Fuel Used (gal)	189.6	188.8	186.9	191.3	187.5	188.8

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	8257	8173	8185	8369	8153	8227
Vehs Exited	8226	8128	8116	8278	8138	8177
Starting Vehs	243	260	247	199	236	229
Ending Vehs	274	305	316	290	251	282
Denied Entry Before	1	7	0	5	2	1
Denied Entry After	2	2	4	0	3	0
Travel Distance (mi)	4961	4880	4859	5016	4897	4922
Travel Time (hr)	277.1	280.2	274.8	278.3	273.4	276.8
Total Delay (hr)	96.2	101.9	97.4	94.8	94.4	96.9
Total Stops	10807	10700	10600	10991	10575	10732
Fuel Used (gal)	189.6	188.8	186.9	191.3	187.5	188.8

1: St. John Street & Margaritas Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	2.5	0.0	0.0	0.3
Total Del/Veh (s)	9.0	2.8	2.2	3.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

3: St. John Street & Garage Access/D St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.5	0.1	0.3	0.2	0.6
Total Del/Veh (s)	12.4	4.0	8.8	12.3	11.1
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

5: Valley & St. John Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	2.7	0.0	1.4	0.9
Total Del/Veh (s)	12.6	17.4	12.7	17.7	14.3
Denied Entry Before	0	1	0	0	1
Denied Entry After	0	0	0	0	0

7: St. John Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.4	0.3	0.9	0.0	0.5
Total Del/Veh (s)	22.3	16.5	31.5	23.3	24.5
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

12: Gilman Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.1
Total Del/Veh (s)	1.0	1.9	31.3	14.6	3.7
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

13: Fore River Pkwy & Valley Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.9	0.4	0.0	0.5
Total Del/Veh (s)	38.2	17.9	13.2	24.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

18: Bramhall Street/Deering Avenue & Congress Street Performance by approach

Approach	EB	WB	NE	SW	All
Denied Del/Veh (s)	0.0	1.5	2.7	3.1	1.5
Total Del/Veh (s)	17.8	22.9	13.3	15.1	17.0
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

19: St. John Street & Park Avenue Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	1.7	0.1	1.1	0.9
Total Del/Veh (s)	44.8	27.3	31.0	34.3
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

22: Proposed Drop Off & Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	1.0	1.7	19.8	2.0
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

24: Valley & Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	2.0	0.2
Total Del/Veh (s)	2.0	1.2	12.1	2.7
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

32: Visitor Garage/Forest Street Garage & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.2	0.1	0.2	0.1
Total Del/Veh (s)	1.0	1.8	17.7	8.4	2.6
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	1.3
Total Del/Veh (s)	40.0
Denied Entry Before	1
Denied Entry After	0

Intersection: 1: St. John Street & Margaritas

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	58	67	145	21
Average Queue (ft)	30	33	28	1
95th Queue (ft)	58	56	99	7
Link Distance (ft)	549		677	671
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		125		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: St. John Street & Garage Access/D St

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	197	132	34	73	196	99	258
Average Queue (ft)	94	47	11	14	83	32	125
95th Queue (ft)	165	96	34	48	162	81	216
Link Distance (ft)	559		663		1605		677
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		150		100		75	
Storage Blk Time (%)	2	0		0	3	1	15
Queuing Penalty (veh)	2	0		0	1	4	7

Intersection: 5: Valley & St. John Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	LT	TR
Maximum Queue (ft)	194	134	283	71	145	177	38	29
Average Queue (ft)	64	90	155	25	62	92	13	8
95th Queue (ft)	140	138	246	57	117	164	37	28
Link Distance (ft)	1605			988	270	270	1083	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		110	335					265
Storage Blk Time (%)	1	3	0					
Queuing Penalty (veh)	2	4	0					

Intersection: 7: St. John Street & Congress Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	R	T	TR	L	T
Maximum Queue (ft)	275	433	315	104	159	429	200	124	223
Average Queue (ft)	141	230	71	43	82	176	159	55	105
95th Queue (ft)	229	362	204	92	138	344	217	107	209
Link Distance (ft)	1767	1767			172	671		792	792
Upstream Blk Time (%)					0				
Queuing Penalty (veh)					0				
Storage Bay Dist (ft)			290	80			175		
Storage Blk Time (%)		3	0	1	8	4	8		
Queuing Penalty (veh)		5	0	2	4	16	25		

Intersection: 12: Gilman Street & Congress Street

Movement	EB	WB	WB	NB	SB
Directions Served	TR	L	T	LTR	LTR
Maximum Queue (ft)	52	77	95	133	70
Average Queue (ft)	6	31	4	54	28
95th Queue (ft)	30	64	39	102	58
Link Distance (ft)	122		170	1063	624
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		65			
Storage Blk Time (%)		1	0		
Queuing Penalty (veh)		6	0		

Intersection: 13: Fore River Pkwy & Valley

Movement	EB	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	L	L	T	T	T	T	R	L	R	R
Maximum Queue (ft)	419	453	675	592	232	222	70	133	154	156
Average Queue (ft)	203	268	190	158	150	135	26	68	97	101
95th Queue (ft)	461	502	647	567	212	205	57	115	144	151
Link Distance (ft)			1519	1519	1275	1275		270	270	270
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	430	430					415			
Storage Blk Time (%)	3	13	1							
Queuing Penalty (veh)	11	43	8							

Intersection: 18: Bramhall Street/Deering Avenue & Congress Street

Movement	EB	EB	WB	WB	NE	NE	SW	SW
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	186	333	207	90	125	156	283	76
Average Queue (ft)	75	148	74	69	31	82	111	69
95th Queue (ft)	136	265	159	101	82	145	226	86
Link Distance (ft)	966		1272		1186		795	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		400		65		135		50
Storage Blk Time (%)		0	7	13		1	5	28
Queuing Penalty (veh)		0	12	13		1	23	25

Intersection: 19: St. John Street & Park Avenue

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	164	235	659	415	530	135	290	80
Average Queue (ft)	116	190	277	184	289	119	150	57
95th Queue (ft)	195	276	523	333	472	174	256	102
Link Distance (ft)			1640	792	792		1376	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	95	95				110		55
Storage Blk Time (%)	9	33	51		38	1	41	3
Queuing Penalty (veh)	39	141	271		107	4	45	9

Intersection: 22: Proposed Drop Off & Congress Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	176	88
Average Queue (ft)	28	33
95th Queue (ft)	113	72
Link Distance (ft)	201	194
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	1	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 24: Valley & Congress Street

Movement	EB	EB	WB	WB	NB	NB
Directions Served	L	TR	L	TR	LT	R
Maximum Queue (ft)	24	20	57	6	77	62
Average Queue (ft)	3	1	20	0	37	29
95th Queue (ft)	16	11	50	3	68	54
Link Distance (ft)		172		122	393	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	50		50			170
Storage Blk Time (%)			2			
Queuing Penalty (veh)			4			

Intersection: 32: Visitor Garage/Forest Street Garage & Congress Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	70	106	74	88
Average Queue (ft)	6	9	34	40
95th Queue (ft)	43	54	62	69
Link Distance (ft)	201	966	624	434
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 834

Intersection: 3: St. John Street & Garage Access/D St

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	31.0	19.0	5.5	21.0	19.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	Min	None	None	Min	None
Avg. Green (s)	20.1	12.5	5.6	18.9	12.5
g/C Ratio	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	88	0	0
Cycles @ Minimum (%)	0	1	0	0	1
Cycles Maxed Out (%)	11	21	10	49	21
Cycles with Peds (%)	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Valley & St. John Street

Phase	2	3	4	6	8
Movement(s) Served	NBTL	WBL	EBTL	SBTL	WBT
Maximum Green (s)	18.0	19.0	18.0	18.0	42.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	None	None	None	None	None
Avg. Green (s)	12.2	15.7	13.0	12.2	33.3
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	10	3	13	10	6
Cycles @ Minimum (%)	0	0	3	0	0
Cycles Maxed Out (%)	16	47	27	16	17
Cycles with Peds (%)	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 7: St. John Street & Congress Street

Phase	1	2	3	4	5	6	8
Movement(s) Served	EBL	WBL	SBL	NBT	WBL	EBTL	SBT
Maximum Green (s)	16.3	22.7	5.7	22.5	4.5	34.5	35.0
Minimum Green (s)	8.0	8.0	3.0	8.0	4.5	8.0	5.0
Recall	None	Min	None	None	None	Min	None
Avg. Green (s)	15.0	15.6	5.8	21.8	5.0	30.1	33.2
g/C Ratio	-0.01	NA	-0.01	NA	-0.01	NA	NA
Cycles Skipped (%)	2	0	9	0	48	0	0
Cycles @ Minimum (%)	2	29	0	0	48	0	0
Cycles Maxed Out (%)	58	29	84	73	52	38	64
Cycles with Peds (%)	0	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 13: Fore River Pkwy & Valley

Phase	4	6	7	8
Movement(s) Served	EBT	SBL	EBL	WBT
Maximum Green (s)	34.0	11.0	11.0	18.0
Minimum Green (s)	5.0	5.0	5.0	5.0
Recall	None	None	None	None
Avg. Green (s)	33.9	10.7	11.0	17.9
g/C Ratio	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	89	89	95	92
Cycles with Peds (%)	0	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 18: Bramhall Street/Deering Avenue & Congress Street

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	SWL	NETL	WBL	EBTL	NEL	SWTL	EBL	WBTL
Maximum Green (s)	5.5	18.5	5.5	12.5	5.5	18.5	5.5	12.5
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall	None	Max	None	None	None	Max	None	None
Avg. Green (s)	5.6	19.2	6.0	13.1	5.6	22.5	8.3	12.6
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01	NA	-0.01	-0.01
Cycles Skipped (%)	51	0	33	1	81	0	18	19
Cycles @ Minimum (%)	0	0	15	0	4	0	0	0
Cycles Maxed Out (%)	48	100	49	73	13	100	79	48
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

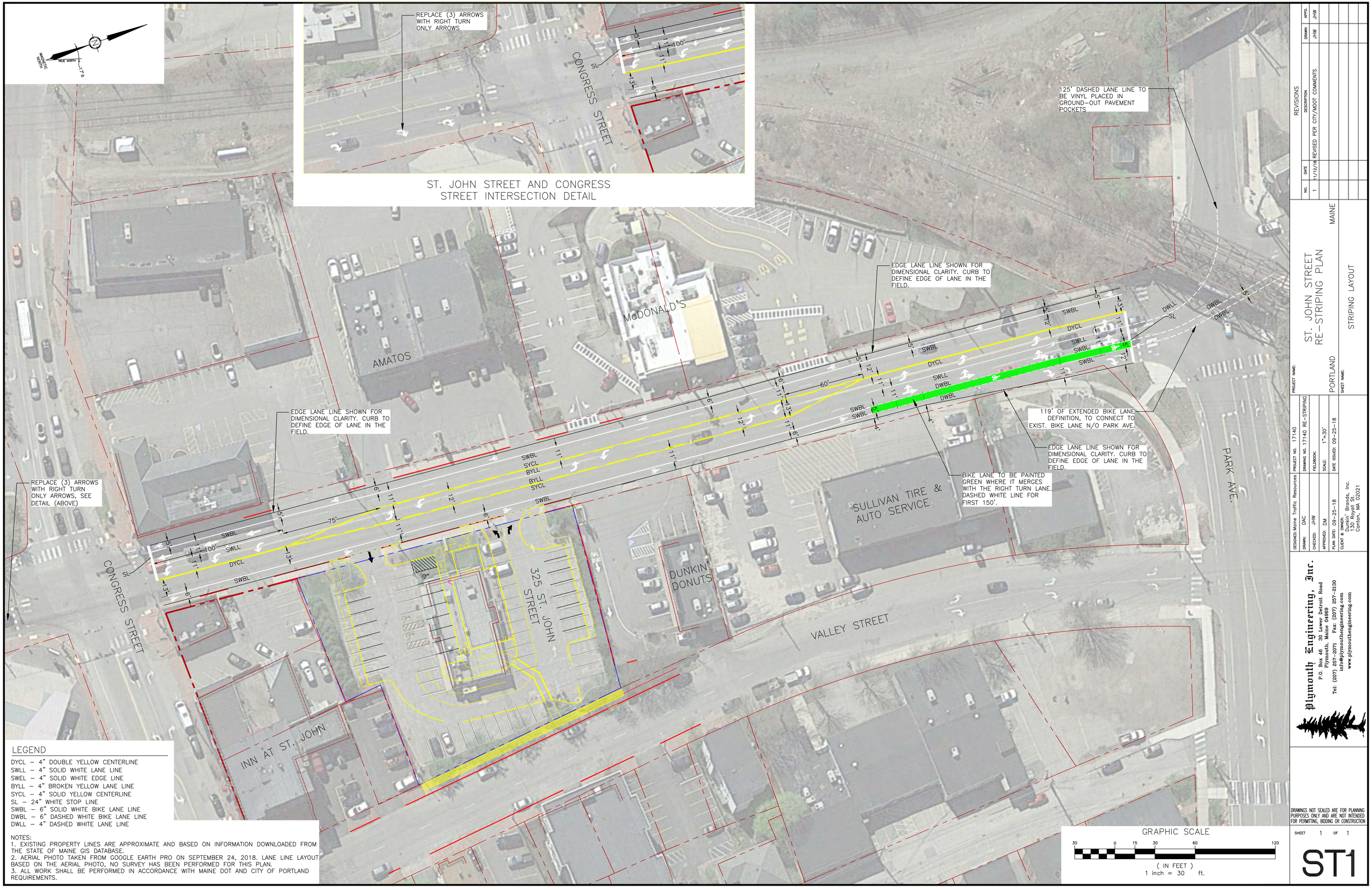
Intersection: 19: St. John Street & Park Avenue

Phase	2	6	8
Movement(s) Served	NBTL	SBTL	WBTL
Maximum Green (s)	29.0	17.0	19.0
Minimum Green (s)	3.0	3.0	3.0
Recall	Min	Min	Min
Avg. Green (s)	28.9	15.4	18.8
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	93	65	96
Cycles with Peds (%)	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0



LEGEND

DYCL – 4" DOUBLE YELLOW CENTERLINE
SWLL – 4" SOLID WHITE LANE LINE
SWEL – 4" SOLID WHITE EDGE LINE
BYLL – 4" BROKEN YELLOW LANE LINE
SYCL – 4" SOLID YELLOW CENTERLINE
SL – 24" WHITE STOP LINE
SWBL – 6" SOLID WHITE BIKE LANE LINE
DWBL – 6" DASHED WHITE BIKE LANE LINE
DWLL – 4" DASHED WHITE LANE LINE

NOTES:
1. EXISTING PROPERTY LINES ARE APPROXIMATE AND BASED ON INFORMATION DOWNLOADED FROM THE STATE OF MAINE GIS DATABASE.
2. AERIAL PHOTO TAKEN FROM GOOGLE EARTH PRO ON SEPTEMBER 24, 2018. LANE LINE LAYOUT BASED ON THE AERIAL PHOTO, NO SURVEY HAS BEEN PERFORMED FOR THIS PLAN.
3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH MAINE DOT AND CITY OF PORTLAND REQUIREMENTS.

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

REVISIONS

NO.	DATE	DESCRIPTION	DRAWN	APPD.
1	11/12/18	REVISED PER CITY/MDOT COMMENTS	JHW	JHW

PROJECT NAME:
ST. JOHN STREET
RE-STRIPING PLAN
PORTLAND MAINE

SHEET NAME:
STRIPING LAYOUT

DESIGNED:	Maine Traffic Resources
DRAWN:	DAC
CHECKED:	JHW
APPROVED:	DM
PLAN DATE:	09-25-18

PROJECT NO. 17140
DRAWING NO. 17140 RE-STRIPING
FIELDBOOK:
SCALE: 1"=30'
DATE ISSUED: 09-25-18

CLIENT & OWNER:
Dunkin' Brands, Inc.
130 Royall Street
Canton, MA 02021

Plymouth Engineering, Inc.
P.O. Box 46 30 Lower Detroit Road
Plymouth, Maine 04969
Tel: (207) 257-2071 Fax: (207) 257-2130
info@plymouthengineering.com
www.plymouthengineering.com

DRAWINGS NOT SEALED ARE FOR PLANNING PURPOSES ONLY AND ARE NOT INTENDED FOR PERMITTING, BIDDING OR CONSTRUCTION

SHEET 1 OF 1

ST1

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	7646	7538	7768	7754	7712	7687
Vehs Exited	7626	7569	7729	7698	7683	7659
Starting Vehs	239	271	247	222	259	242
Ending Vehs	259	240	286	278	288	271
Denied Entry Before	2	1	0	0	1	0
Denied Entry After	3	2	2	1	3	0
Travel Distance (mi)	5425	5384	5489	5511	5512	5464
Travel Time (hr)	275.8	275.2	276.8	283.5	278.1	277.9
Total Delay (hr)	79.3	80.8	77.7	84.1	78.6	80.1
Total Stops	9140	9229	9289	9366	9326	9268
Fuel Used (gal)	197.0	195.8	198.4	200.6	199.3	198.2

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	7646	7538	7768	7754	7712	7687
Vehs Exited	7626	7569	7729	7698	7683	7659
Starting Vehs	239	271	247	222	259	242
Ending Vehs	259	240	286	278	288	271
Denied Entry Before	2	1	0	0	1	0
Denied Entry After	3	2	2	1	3	0
Travel Distance (mi)	5425	5384	5489	5511	5512	5464
Travel Time (hr)	275.8	275.2	276.8	283.5	278.1	277.9
Total Delay (hr)	79.3	80.8	77.7	84.1	78.6	80.1
Total Stops	9140	9229	9289	9366	9326	9268
Fuel Used (gal)	197.0	195.8	198.4	200.6	199.3	198.2

1: St. John Street & Margaritas Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	3.4	0.0	0.0	0.2
Total Del/Veh (s)	8.1	3.1	2.0	2.8
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

3: St. John Street & Garage Access/D St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.4	0.1	0.5	0.1	0.4
Total Del/Veh (s)	15.0	6.9	5.9	6.8	7.9
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

5: Valley & St. John Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	2.7	0.0	2.1	0.8
Total Del/Veh (s)	12.7	16.2	13.7	16.4	14.2
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

7: St. John Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.6	0.3	1.2	0.0	0.6
Total Del/Veh (s)	30.7	17.5	42.3	26.9	30.8
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

12: Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	1.3	1.4	23.5	1.8
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

13: Fore River Pkwy & Valley Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.4	0.0	0.3
Total Del/Veh (s)	24.6	17.2	11.6	19.9
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

16: Valley & Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	2.7	0.2
Total Del/Veh (s)	1.9	0.9	10.3	2.3
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

19: St. John Street & Park Avenue Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	1.3	0.0	0.7	0.6
Total Del/Veh (s)	31.4	20.6	24.1	25.0
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

24: Gilman Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.3	0.0	0.1	0.1	0.2
Total Del/Veh (s)	1.3	1.0	12.8	10.8	2.1
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

29: Bramhall Street/Deering Avenue & Congress Street Performance by approach

Approach	EB	WB	NE	SW	All
Denied Del/Veh (s)	0.0	1.9	2.2	2.8	1.2
Total Del/Veh (s)	7.3	13.3	13.1	10.0	9.9
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

35: Visitor Garage/Forest Street Garage & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1	0.1
Total Del/Veh (s)	2.0	1.9	16.6	5.3	2.3
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	35.3
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: St. John Street & Margaritas

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	38	62	158	61
Average Queue (ft)	10	31	29	4
95th Queue (ft)	34	54	91	26
Link Distance (ft)	620		678	670
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		125		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: St. John Street & Garage Access/D St

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	158	82	36	54	128	74	196
Average Queue (ft)	67	29	11	23	52	25	83
95th Queue (ft)	119	62	35	46	104	63	150
Link Distance (ft)	564		489		1605		678
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		150		100		75	
Storage Blk Time (%)	0				1	0	6
Queuing Penalty (veh)	0				0	1	2

Intersection: 5: Valley & St. John Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	LT	TR
Maximum Queue (ft)	302	132	254	93	170	270	48	54
Average Queue (ft)	64	70	131	24	77	136	13	13
95th Queue (ft)	190	116	211	59	144	229	40	41
Link Distance (ft)	1605			1012	268	268	937	
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						1		
Storage Bay Dist (ft)		110	335					265
Storage Blk Time (%)	1	1						
Queuing Penalty (veh)	2	1						

Intersection: 7: St. John Street & Congress Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	R	T	R	L	T
Maximum Queue (ft)	644	847	315	98	123	428	168	124	245
Average Queue (ft)	187	355	186	44	59	204	38	75	127
95th Queue (ft)	403	689	359	87	107	369	147	136	219
Link Distance (ft)	1767	1767			178	670			796
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			290	80			175	100	
Storage Blk Time (%)		13	0	3	3	20	0	6	13
Queuing Penalty (veh)		43	1	5	2	8	0	18	12

Intersection: 12: Congress Street

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	4	112	73
Average Queue (ft)	0	14	23
95th Queue (ft)	3	66	58
Link Distance (ft)	169	202	174
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: Fore River Pkwy & Valley

Movement	EB	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	L	L	T	T	T	T	R	L	R	R
Maximum Queue (ft)	375	394	349	319	187	192	91	146	138	135
Average Queue (ft)	177	250	105	105	127	110	40	60	70	72
95th Queue (ft)	394	428	318	240	175	169	80	110	112	111
Link Distance (ft)			2719	2719	1454	1454		268	268	268
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	430	430					415			
Storage Blk Time (%)	2	4	0							
Queuing Penalty (veh)	8	22	2							

Intersection: 16: Valley & Congress Street

Movement	EB	EB	WB	NB	NB
Directions Served	L	TR	L	LT	R
Maximum Queue (ft)	24	24	46	62	63
Average Queue (ft)	2	1	13	23	28
95th Queue (ft)	13	12	37	52	55
Link Distance (ft)		178		315	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	50		50		170
Storage Blk Time (%)		0	0		
Queuing Penalty (veh)		0	1		

Intersection: 19: St. John Street & Park Avenue

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	150	215	250	198	395	135	401	80
Average Queue (ft)	73	106	134	110	171	110	181	66
95th Queue (ft)	132	180	203	198	295	170	329	105
Link Distance (ft)			1678		796		2255	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	95	95		175		110		55
Storage Blk Time (%)	4	10	26	0	19	1	36	5
Queuing Penalty (veh)	13	31	101	1	90	4	60	20

Intersection: 24: Gilman Street & Congress Street

Movement	EB	WB	NB	SB
Directions Served	TR	L	LTR	LTR
Maximum Queue (ft)	62	47	88	48
Average Queue (ft)	5	12	37	17
95th Queue (ft)	31	37	68	45
Link Distance (ft)	124		1063	624
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)		65		
Storage Blk Time (%)		0		
Queuing Penalty (veh)		1		

Intersection: 29: Bramhall Street/Deering Avenue & Congress Street

Movement	EB	EB	WB	WB	NE	NE	SW	SW
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	51	226	165	90	104	125	125	75
Average Queue (ft)	17	101	46	70	48	60	35	45
95th Queue (ft)	44	174	126	102	96	111	83	77
Link Distance (ft)	965		1272		1186		795	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		400		65		135		50
Storage Blk Time (%)			0	12		0	2	7
Queuing Penalty (veh)			1	4		0	3	5

Intersection: 35: Visitor Garage/Forest Street Garage & Congress Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	104	29	48	30
Average Queue (ft)	32	2	19	5
95th Queue (ft)	82	16	46	22
Link Distance (ft)	202	965	508	434
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 464

Intersection: 3: St. John Street & Garage Access/D St

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	45.0	5.0	6.5	34.0	5.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	Min	None	None	Min	None
Avg. Green (s)	27.9	5.0	5.7	22.2	5.0
g/C Ratio	-0.01	-0.01	-0.01	NA	-0.01
Cycles Skipped (%)	9	9	75	0	9
Cycles @ Minimum (%)	0	91	7	1	91
Cycles Maxed Out (%)	9	91	7	20	91
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Valley & St. John Street

Phase	2	3	4	6	8
Movement(s) Served	NBTL	WBL	EBTL	SBTL	WBT
Maximum Green (s)	26.0	21.0	18.0	26.0	44.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	None	None	None	None	None
Avg. Green (s)	13.8	16.2	11.5	13.8	30.6
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	6	4	12	6	3
Cycles @ Minimum (%)	0	0	1	0	0
Cycles Maxed Out (%)	4	29	16	4	6
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 7: St. John Street & Congress Street

Phase	1	2	3	4	5	6	8
Movement(s) Served	EBL	WBL	SBL	NBT	WBL	EBTL	SBT
Maximum Green (s)	19.1	15.7	4.7	17.7	5.0	29.8	29.2
Minimum Green (s)	8.0	8.0	3.0	8.0	5.0	8.0	5.0
Recall	None	Min	None	None	None	Min	None
Avg. Green (s)	16.3	15.3	4.9	17.2	5.2	30.3	27.6
g/C Ratio	NA	NA	-0.01	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	9	0	38	0	0
Cycles @ Minimum (%)	2	23	0	0	62	0	0
Cycles Maxed Out (%)	49	60	91	79	62	94	71
Cycles with Peds (%)	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 13: Fore River Pkwy & Valley

Phase	4	6	7	8
Movement(s) Served	EBT	SBL	EBL	WBT
Maximum Green (s)	39.0	11.0	17.0	17.0
Minimum Green (s)	5.0	5.0	5.0	5.0
Recall	None	None	None	None
Avg. Green (s)	38.9	10.3	16.8	15.9
g/C Ratio	-0.01	-0.01	NA	NA
Cycles Skipped (%)	3	3	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	60	70	92	66
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 19: St. John Street & Park Avenue

Phase	2	6	8
Movement(s) Served	NBTL	SBTL	WBTL
Maximum Green (s)	15.0	20.0	10.0
Minimum Green (s)	3.0	3.0	3.0
Recall	Min	Min	Min
Avg. Green (s)	14.7	18.1	10.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	90	65	98
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 29: Bramhall Street/Deering Avenue & Congress Street

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	SWL	NETL	WBL	EBTL	NEL	SWTL	EBL	WBTL
Maximum Green (s)	5.5	13.5	5.5	17.5	5.5	13.5	5.5	17.5
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall	None	Max	None	None	None	Max	None	None
Avg. Green (s)	5.6	15.0	6.7	14.3	5.4	16.3	7.5	14.6
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	60	2	77	6	71	2	80	6
Cycles @ Minimum (%)	1	0	11	0	10	0	0	0
Cycles Maxed Out (%)	35	98	11	38	17	98	20	33
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1312	1361	1422	1347	1303	1354
Vehs Exited	1256	1336	1384	1268	1261	1302
Starting Vehs	217	241	248	228	209	227
Ending Vehs	273	266	286	307	251	272
Denied Entry Before	1	1	1	3	3	1
Denied Entry After	33	5	6	11	0	9
Travel Distance (mi)	773	800	844	789	747	790
Travel Time (hr)	47.2	45.2	48.0	45.9	39.3	45.1
Total Delay (hr)	18.9	16.1	17.3	17.2	12.1	16.3
Total Stops	1821	1757	1918	1743	1493	1748
Fuel Used (gal)	30.5	30.6	32.5	30.5	27.7	30.4

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:10
Total Time (min)	10

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	1312	1361	1422	1347	1303	1354
Vehs Exited	1256	1336	1384	1268	1261	1302
Starting Vehs	217	241	248	228	209	227
Ending Vehs	273	266	286	307	251	272
Denied Entry Before	1	1	1	3	3	1
Denied Entry After	33	5	6	11	0	9
Travel Distance (mi)	773	800	844	789	747	790
Travel Time (hr)	47.2	45.2	48.0	45.9	39.3	45.1
Total Delay (hr)	18.9	16.1	17.3	17.2	12.1	16.3
Total Stops	1821	1757	1918	1743	1493	1748
Fuel Used (gal)	30.5	30.6	32.5	30.5	27.7	30.4

1: St. John Street & Margaritas Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	2.5	0.0	0.0	0.3
Total Del/Veh (s)	11.7	3.7	2.2	3.9
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

3: St. John Street & Garage Access/D St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.7	0.1	0.3	0.1	0.7
Total Del/Veh (s)	11.7	7.1	8.2	10.6	10.2
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

5: Valley & St. John Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	2.5	0.0	1.4	0.8
Total Del/Veh (s)	10.9	14.1	12.5	20.6	12.6
Denied Entry Before	0	1	0	0	1
Denied Entry After	0	0	0	0	0

7: St. John Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.4	0.4	12.9	0.0	4.2
Total Del/Veh (s)	25.8	25.1	50.3	26.1	32.9
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	7	0	7

12: Gilman Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.1
Total Del/Veh (s)	1.1	1.7	19.9	12.9	2.8
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

13: Fore River Pkwy & Valley Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.8	0.4	0.0	0.4
Total Del/Veh (s)	18.1	18.6	11.8	16.5
Denied Entry Before	0	0	0	0
Denied Entry After	1	0	0	1

18: Bramhall Street/Deering Avenue & Congress Street Performance by approach

Approach	EB	WB	NE	SW	All
Denied Del/Veh (s)	0.0	1.4	2.6	3.2	1.5
Total Del/Veh (s)	13.7	22.4	13.5	13.7	15.1
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

19: St. John Street & Park Avenue Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	1.6	1.5	1.1	1.5
Total Del/Veh (s)	40.0	31.4	27.0	34.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	1	0	1

22: Proposed Drop Off & Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.2	1.8	19.9	2.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

24: Valley & Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	1.8	0.2
Total Del/Veh (s)	2.1	1.0	14.4	3.0
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

32: Visitor Garage/Forest Street Garage & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1	0.1
Total Del/Veh (s)	1.2	2.0	15.6	6.9	2.6
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	2.6
Total Del/Veh (s)	35.1
Denied Entry Before	1
Denied Entry After	9

Intersection: 1: St. John Street & Margaritas

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	60	46	100	4
Average Queue (ft)	36	33	42	1
95th Queue (ft)	67	50	116	8
Link Distance (ft)	549		677	671
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		125		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: St. John Street & Garage Access/D St

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	150	77	34	43	143	63	156
Average Queue (ft)	100	48	11	11	80	32	103
95th Queue (ft)	178	115	36	54	159	71	169
Link Distance (ft)	559		663		1605		677
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		150		100		75	
Storage Blk Time (%)	2	0			2	1	13
Queuing Penalty (veh)	3	0			0	5	5

Intersection: 5: Valley & St. John Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	LT	TR
Maximum Queue (ft)	81	114	201	33	85	140	34	36
Average Queue (ft)	49	79	131	21	58	89	11	10
95th Queue (ft)	97	125	217	46	99	160	37	36
Link Distance (ft)	1605			988	270	270	1083	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		110	335					265
Storage Blk Time (%)	0	2						
Queuing Penalty (veh)	0	2						

Intersection: 7: St. John Street & Congress Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	R	T	R	L	T
Maximum Queue (ft)	209	352	129	74	123	510	197	117	238
Average Queue (ft)	148	248	58	38	92	393	87	69	139
95th Queue (ft)	249	405	153	95	153	672	237	129	260
Link Distance (ft)	1767	1767			180	671			794
Upstream Blk Time (%)					0	1			
Queuing Penalty (veh)					1	8			
Storage Bay Dist (ft)			290	80			175	100	
Storage Blk Time (%)		4	0	0	15	41	0	2	14
Queuing Penalty (veh)		7	0	0	7	32	1	7	11

Intersection: 12: Gilman Street & Congress Street

Movement	EB	WB	NB	SB
Directions Served	TR	L	LTR	LTR
Maximum Queue (ft)	34	66	65	43
Average Queue (ft)	9	29	42	21
95th Queue (ft)	36	65	71	51
Link Distance (ft)	122		1063	624
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		65		
Storage Blk Time (%)		2		
Queuing Penalty (veh)		7		

Intersection: 13: Fore River Pkwy & Valley

Movement	EB	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	L	L	T	T	T	T	R	L	R	R
Maximum Queue (ft)	213	255	138	73	209	191	52	79	127	126
Average Queue (ft)	104	178	66	50	164	143	28	52	92	95
95th Queue (ft)	238	300	179	84	257	241	56	90	136	132
Link Distance (ft)			1519	1519	1275	1275		270	270	270
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	430	430					415			
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 18: Bramhall Street/Deering Avenue & Congress Street

Movement	EB	EB	WB	WB	NE	NE	SW	SW
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	134	183	133	87	113	128	188	75
Average Queue (ft)	78	121	82	65	43	85	103	69
95th Queue (ft)	153	189	180	100	133	146	213	86
Link Distance (ft)	966		1272		1186		795	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		400		65		135		50
Storage Blk Time (%)			5	16		2	5	28
Queuing Penalty (veh)			9	16		1	20	25

Intersection: 19: St. John Street & Park Avenue

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	138	218	321	200	558	135	188	78
Average Queue (ft)	96	193	270	170	385	118	134	55
95th Queue (ft)	172	268	448	250	740	179	213	99
Link Distance (ft)			1640		794		1376	
Upstream Blk Time (%)					0			
Queuing Penalty (veh)					3			
Storage Bay Dist (ft)	95	95		175		110		55
Storage Blk Time (%)	12	33	54	1	37	0	37	3
Queuing Penalty (veh)	52	141	287	9	225	2	41	8

Intersection: 22: Proposed Drop Off & Congress Street

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	4	90	57
Average Queue (ft)	1	34	32
95th Queue (ft)	8	118	70
Link Distance (ft)	170	201	194
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 24: Valley & Congress Street

Movement	EB	WB	WB	NB	NB
Directions Served	L	L	TR	LT	R
Maximum Queue (ft)	14	38	2	72	45
Average Queue (ft)	3	16	0	45	28
95th Queue (ft)	16	43	4	85	56
Link Distance (ft)			122	393	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	50	50			170
Storage Blk Time (%)		1			
Queuing Penalty (veh)		2			

Intersection: 32: Visitor Garage/Forest Street Garage & Congress Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	11	52	55	47
Average Queue (ft)	2	12	37	35
95th Queue (ft)	20	59	63	50
Link Distance (ft)	201	966	624	434
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 937

Intersection: 3: St. John Street & Garage Access/D St

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	31.0	19.0	5.5	21.0	19.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	Min	None	None	Min	None
Avg. Green (s)	20.4	13.9	5.5	19.6	13.9
g/C Ratio	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	92	0	0
Cycles @ Minimum (%)	0	0	0	0	0
Cycles Maxed Out (%)	8	31	8	46	31
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Valley & St. John Street

Phase	2	3	4	6	8
Movement(s) Served	NBTL	WBL	EBTL	SBTL	WBT
Maximum Green (s)	18.0	19.0	18.0	18.0	42.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	None	None	None	None	None
Avg. Green (s)	12.0	15.3	13.2	12.0	34.5
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01
Cycles Skipped (%)	9	0	9	9	9
Cycles @ Minimum (%)	0	0	0	0	0
Cycles Maxed Out (%)	18	36	27	18	18
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 7: St. John Street & Congress Street

Phase	1	2	3	4	5	6	8
Movement(s) Served	EBL	WBL	SBL	NBT	WBL	EBTL	SBT
Maximum Green (s)	19.2	11.8	4.7	31.5	4.5	26.5	43.0
Minimum Green (s)	8.0	8.0	3.0	8.0	4.5	8.0	5.0
Recall	None	Min	None	None	None	Min	None
Avg. Green (s)	17.3	10.2	5.3	29.5	4.6	31.9	40.4
g/C Ratio	NA	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	0	50	0	0
Cycles @ Minimum (%)	0	57	0	0	33	0	0
Cycles Maxed Out (%)	57	29	100	71	50	83	71
Cycles with Peds (%)	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 13: Fore River Pkwy & Valley

Phase	4	6	7	8
Movement(s) Served	EBT	SBL	EBL	WBT
Maximum Green (s)	34.0	11.0	11.0	18.0
Minimum Green (s)	5.0	5.0	5.0	5.0
Recall	None	None	None	None
Avg. Green (s)	33.9	10.8	11.4	19.2
g/C Ratio	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	70	82	80	90
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Attachment 7D

St. John / Congress Collision Diagram
Pedestrian and Bicycle Collision Locations
Left Turn Lane Warrants

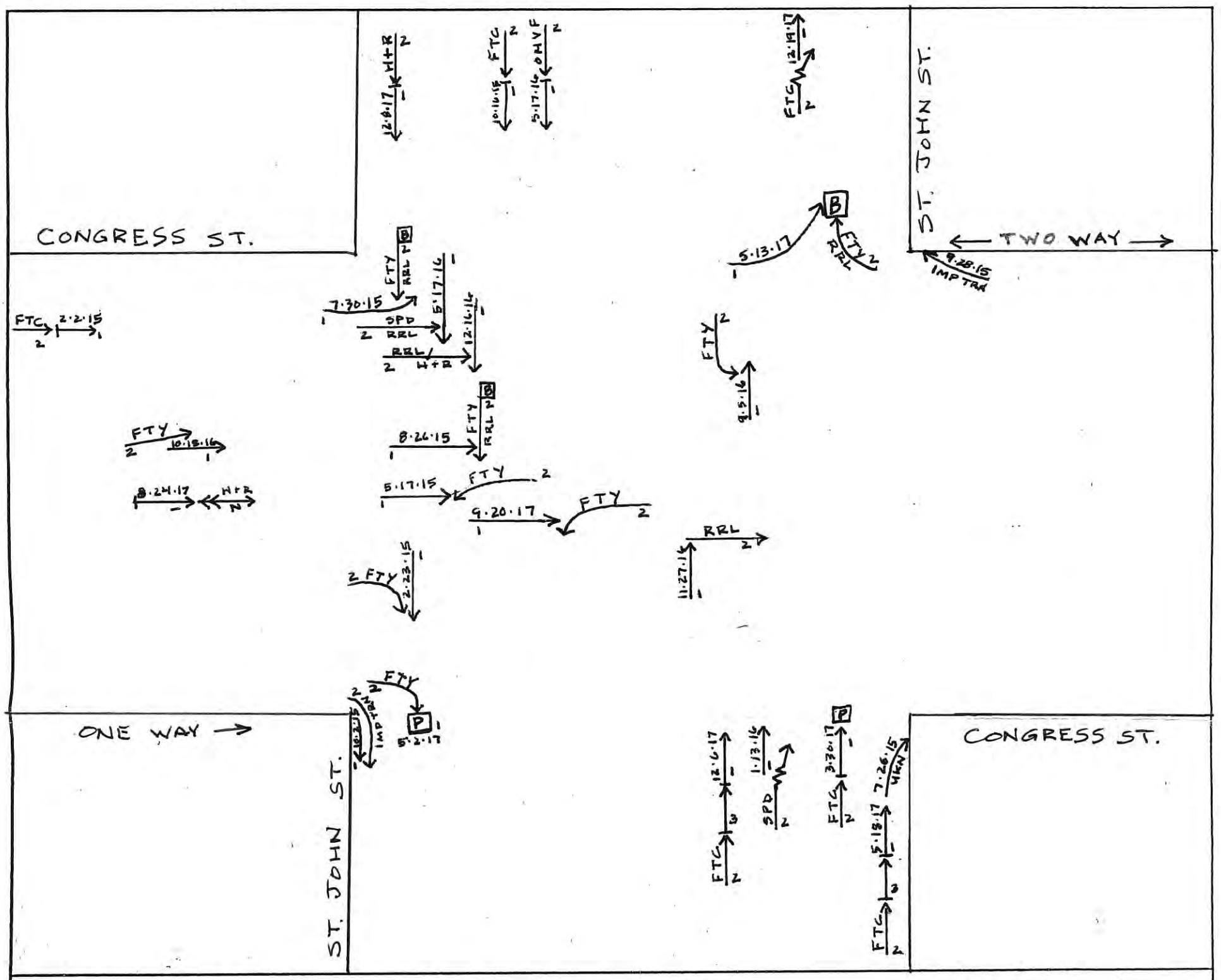
COLLISION DIAGRAM

SHEET 1 OF 2

LOCATION Intersection of Congress Street & St. John Street

TOWN Portland, Maine NODE NO(S) 16765

YEARS REVIEWED 2015 - 2017 DATE PREPARED Nov. 16, 2018



CRITICAL RATE FACTOR _____ EQUIV. PROP. DAMAGE ACC/YEAR _____ ACC/MEV _____

S:/SHEETS/COLLISION DIAGRAM.DWG

LIGHT

1. DAWN (MORNING)
2. DAYLIGHT
3. DUSK (EVENING)
4. DARK (ST. LIGHTS ON)
5. DARK (NO ST. LIGHTS)
6. DARK (ST. LIGHTS OFF)
7. OTHER

ROAD SURFACE

1. DRY
2. WET
3. SNOW/SLUSH–SANDED
4. ICE/PACKED SNOW–SANDED
5. MUDDY
6. DEBRIS
7. OILY
8. SNOW/SLUSH–NOT SANDED
9. ICE–PKD. SNOW–NOT SANDED
10. OTHER

APPARENT CONTRIBUTING FACTORS – HUMAN

1. NO IMPROPER ACTION
2. FAIL TO YLD. RIGHT OF WAY
3. ILLEGAL UNSAFE SPEED
4. FOLLOW TOO CLOSE
5. DISREGARD TRAFFIC CONTROL DEVICE
6. DRIVING LEFT OF CENTER–NO PASSING
7. IMPROPER PASS–OVERTAKING
8. IMP. UNSAFE LANE CHANGE
9. IMP. PARKING START/STOP
10. IMPROPER TURN
11. UNSAFE BACKING
12. NO SIGNAL OR IMP. SIGNAL
13. IMPEDING TRAFFIC
14. DRIVER INATTENTION–DISTRACTION
15. DRIVER INEXPERIENCE
16. PEDEST. VIOLATION ERROR
17. PHYSICAL IMPAIRMENT
18. VISION OBSCURED–WINDSHIELD GLASS
19. VISION OBSCURED–SUN/HEADLIGHTS
20. OTHER VISION OBSCUREMENT
30. OTHER HUMAN VIOLATION FACTOR
31. HIT AND RUN
51. UNKNOWN

– VEHICULAR

41. DEFECTIVE BRAKES
42. DEFECTIVE TIRE/FAILURE
43. DEFECTIVE LIGHTS
44. DEFECTIVE SUSPENSION OR FACTOR
45. DEFECTIVE STEERING
50. OTHER VEHICLE DEFECT
51. UNKNOWN

SYMBOLS

ANGLE
PEDESTRIAN
FATAL ACCIDENT
BACKING
REAR END
FIXED OBJECT
SIDE SWIPE
VEHICLE (MOVING)
HEAD ON
TURNING MOVE
BICYCLE
OVERTURN
CHANGE LANE
ANIMAL
PARKED VEHICLE
OUT OF CONTROL
SLED

WEATHER

C – CLEAR
F – FOG
R – RAIN
SL – SLEET
S – SNOW
CL – CLOUDY
XW – CROSS WINDS

INJURIES

K – FATAL
B – NON–INCAPACITATING
A – INCAPACITATING
C – POSSIBLE INJURY

COLLISION DIAGRAM

SHEET 2 OF 2

LOCATION Intersection of Congress Street & St. John Street

TOWN Portland, Maine NODE NO(S) 16765

YEARS REVIEWED 2015 - 2017 DATE PREPARED Nov. 16, 2018

REPORT NO.	DATE	TIME	INJURIES K	A	B	C	LIGHT	ROAD SURFACE	ACF	OTHER
15·000457	02·02·15	15:00					2	3	4	
15·000921	02·23·15	11:38					2	1	2	
15·001773	05·17·15	16:12					2	1	2	
15·002529	07·26·15	21:21					4	1	51	swerve to miss vehicle
15·002575	07·30·15	19:30			1		3	1	30	Cyclist
15·002891	08·26·15	07:24				1	2	1	30	Cyclist
15·003256	09·28·15	16:23					2	1	10	
15·003322	10·02·15	13:18					2	1	10	
15·003479	10·16·15	13:19					2	1	4	
16·000137	01·13·16	08:55					2	3	3	
16·001002	03·27·16	12:50					2	1	3	
16·001459	05·17·16	08:00					2	1	30	
16·002712	09·05·16	06:00					2	1	2	
16·003213	10·18·16	06:53					2	1	2	
16·003632	11·27·16	17:25					4	1	5	Ran Red Light
16·003853	12·16·16	21:30					4	1	31	
17·001104	03·30·17	18:47					2	1	4	
17·001440	05·02·17	14:50				1	2	2	2	Pedestrian
17·001571	05·13·17	10:45				1	2	1	5	Cyclist
17·001623	05·18·17	16:55					2	1	4	
17·002694	08·24·17	08:25					2	1	31	
17·002991	09·20·17	05:38			1		4	2	2	
17·003791	12·06·17	14:21					2	1	4	
17·003814	12·08·17	13:26					2	1	31	
17·003968	12·19·17	07:34					2	3	4	

S:/SHEETS/COLLISION DIAGRAM.DWG

Pedestrian and Bicycle Collisions

Figure No. A



Bramhall St. - 22; MMC Congress Street Building
PORTLAND, MAINE

Design: EAL Scale: NONE
Draft: Date: OCT 2018
Checked: RED File Name: 2866.01 - TIS Figures

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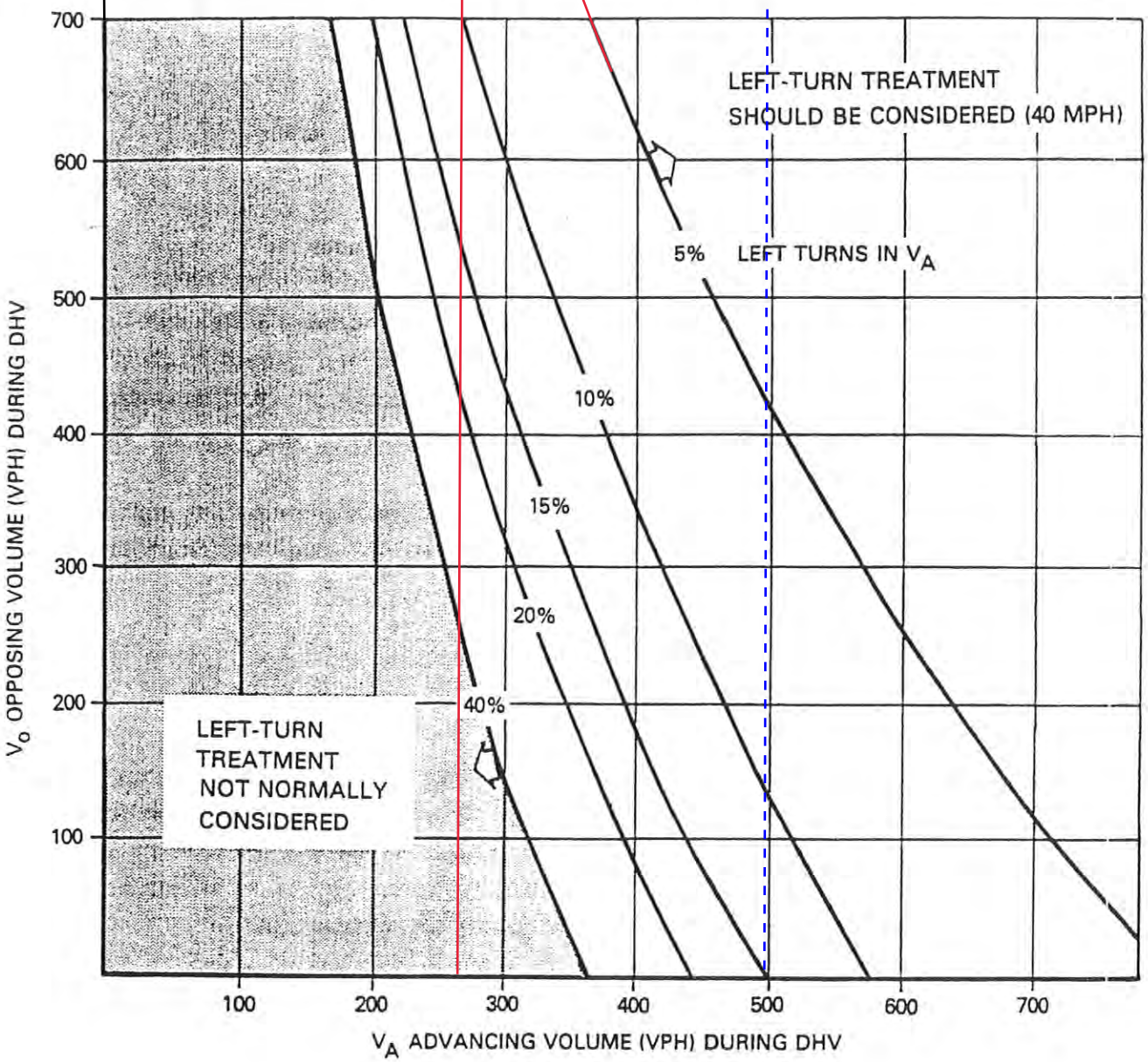
Congress Street Proposed Drop Off Left Turn Lane Warrant

867



Instructions:

1. The family of curves represent the percent of left turns in the advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.

4. Read V_A and V_O into the chart and locate the intersection of the two volumes.

5. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is warranted. If the point is to the left of the line, then a left-turn lane is not warranted based on traffic volumes.

AM Peak Hour
V_A = 269
V_O = 867
%L = 4.5%

PM Peak Hour
V_A = 496
V_O = 774
%L = 3.4%

VOLUME WARRANTS FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON 2-LANE HIGHWAYS (40 mph)

Figure 8-19

AM Peak Hour of Adjacent Street

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

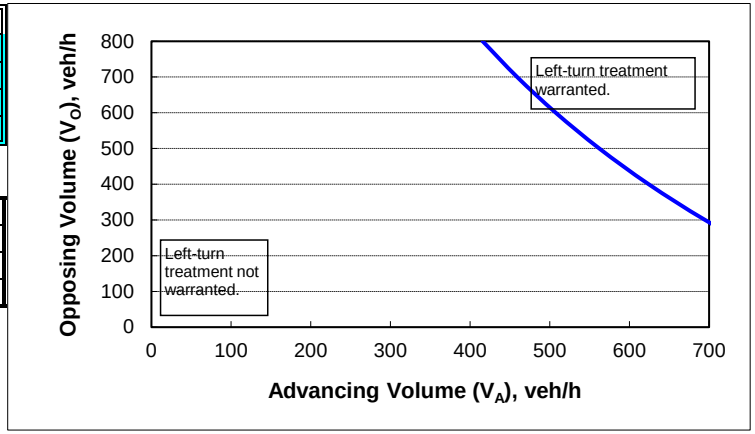
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	5%
Advancing volume (V_A), veh/h:	269
Opposing volume (V_O), veh/h:	867

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	389
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

PM Peak Hour of Adjacent Street

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

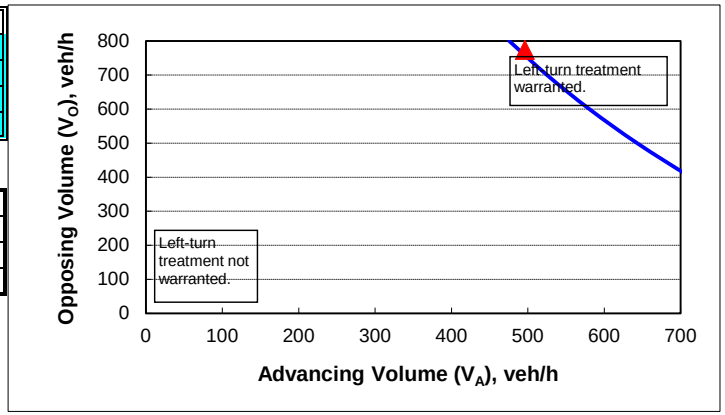
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	25
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	496
Opposing volume (V_O), veh/h:	774

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	488
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

November 12, 2018

Maine Medical Center
MaineHealth

Nell Donaldson, Senior Planner
City of Portland Planning Division
389 Congress Street
Portland, ME 04101

Re: MMC Congress Building| 22 Bramhall St| Level III Site Plan
Request for Summary of Activity on the Bramhall Campus over 10 Years

Dear Nell:

Thank you for coordinating the review of the Maine Medical Center Congress Building project located at 22 Bramhall with frontage on Congress St.. This letter provides a summation of building projects on MMC's Bramhall Campus over the past ten years. This information was requested on Tuesday October, 23, 2018 by Tom Errico, TY Lin, as part of the Traffic Movement Permit (TMP) scoping meeting.

Executive Summary

Maine Medical Center is a provider of advanced healthcare services to Northern New England residents and visitors as described in MMC's Institutional Development Plan (IDP) which was approved by the Portland Planning Board on October 9, 2017 on file with at the City of Portland.

Many MMC departments and employees serve a system-wide role yet are considered MMC employees. Many of these departments are not located on MMC's Bramhall Campus. This means reporting the total number of MMC employees will not provide an accurate representation of the number of vehicle trips generated by MMC's Bramhall Campus.

MMC's human resources information systems are not built to report the number of employees working at the Bramhall Campus with a level of accuracy that would usefully inform a traffic analysis. The complexity of providing high-quality healthcare services in an ever-changing environment requires matrixed reporting relationships that create significant challenges to reporting this information accurately.

MMC transitioned to a new electronic medical record (EMR) in 2013 called EPIC. At the time, MMC decided not to translate data from its prior EMR into EPIC. This means that reporting information from and prior to 2013 is not commonly done within the organization. However, in 2003, MMC submitted a Certificate of Need application to the State of Maine which required the reporting of calendar year 2001 patient discharges. Patient discharges is a common way for hospitals to report patient volume. It is not a comprehensive metric of patient volume because it only captures inpatient volume, not outpatient volume. In calendar year 2001, MMC has 30,798 inpatient discharges. More recent inpatient discharge volumes are more readily available.

Figure 1 - MMC Inpatient Discharges CY 2014 - CY 2017

	CY 2014	CY 2015	CY 2016	CY 2017
MMC Inpatient Discharges	28,605	29,034	29,492	30,127

Source: MHDO 2014-2017

Existing Site Location of Development Permit

The Maine Department of Environmental Protection (MeDEP) issued a Site Location of Development Permit (SLODA) L-7981-T3-C-N to Maine Medical Center on June 2nd, 1998 for a 49,150 square foot medical office building located at 887 Congress St. A copy of this permit is included with this letter. At the time this permit was issued, the traffic permitting rules were essentially as they are today with a 100 peak hour threshold triggering the permit, but the process was incorporated into the SLODA permit and rather than a separate permit issued by the MaineDOT with delegated review authority to the City of Portland as is done today.

Past Facility Projects

In 2007, MMC completed a 192,000 square foot expansion for the Obstetrics and Newborn Center as well as a 512 space parking garage. The proposed expansion did not require a Traffic Movement Permit since the project was largely proposed to allow for decompression of the campus since much of the existing hospital space did not meet current industry standards. The traffic study completed in 2004 by Gorrill Palmer forecast an increase of 19 and 25 trip ends during the AM and PM peak hours respectively. Since the increase was less than 100 trip ends, a traffic permit was not required.

In 2016, MMC completed a 18,758 square foot expansion for additional inpatient beds and procedure spaces. The project forecasted to add 49 employees bringing the total employees added since and including the 2007 expansion to 184. The forecasted increase resulted in an estimated increase of 77 and 84 trip ends during the AM and PM peak hours respectively due to the 2007 and proposed expansions combined. This increase was less than the 100 trip ends threshold requiring a MaineDOT traffic movement permit.

Current Proposal

MMC is currently proposing to deconstruct a 1,200 space parking garage and construct a 265,000 square foot hospital building to internally reorganize cardiac services within the hospital campus, which means timely, efficient access for patients and care teams and reduction of time and effort spent traveling through the hospital corridors. The 19 procedure rooms will align with industry best practices, providing adequate space to treat patients, ultimately improving the experience at MMC. The project is anticipated to generate additional trip ends by 2026 as follows:

Figure 2 - Estimated Trip Ends in 2026

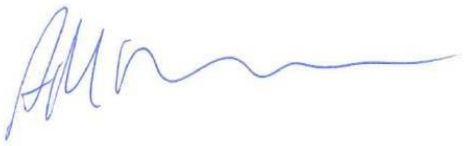
- AM Peak Hour Adjacent Street: 110 trip ends
- PM Peak Hour Adjacent Street: 107 trip ends
- AM Peak Hour of Generator: 126 trip ends
- PM Peak Hour of Generator: 152 trip ends
- Saturday Peak Hour: 172 trip ends

Source: MMC TMP Application Section 7 (Submitted by Gorrill Palmer) Amended October 2018

Closing

We hope that this clarifies the status of the traffic permitting and employee growth on the Bramhall campus for MMC over the past 10 years.

Sincerely,



Alexander M. Green
Director of Planning & Regulatory Compliance
Maine Medical Center

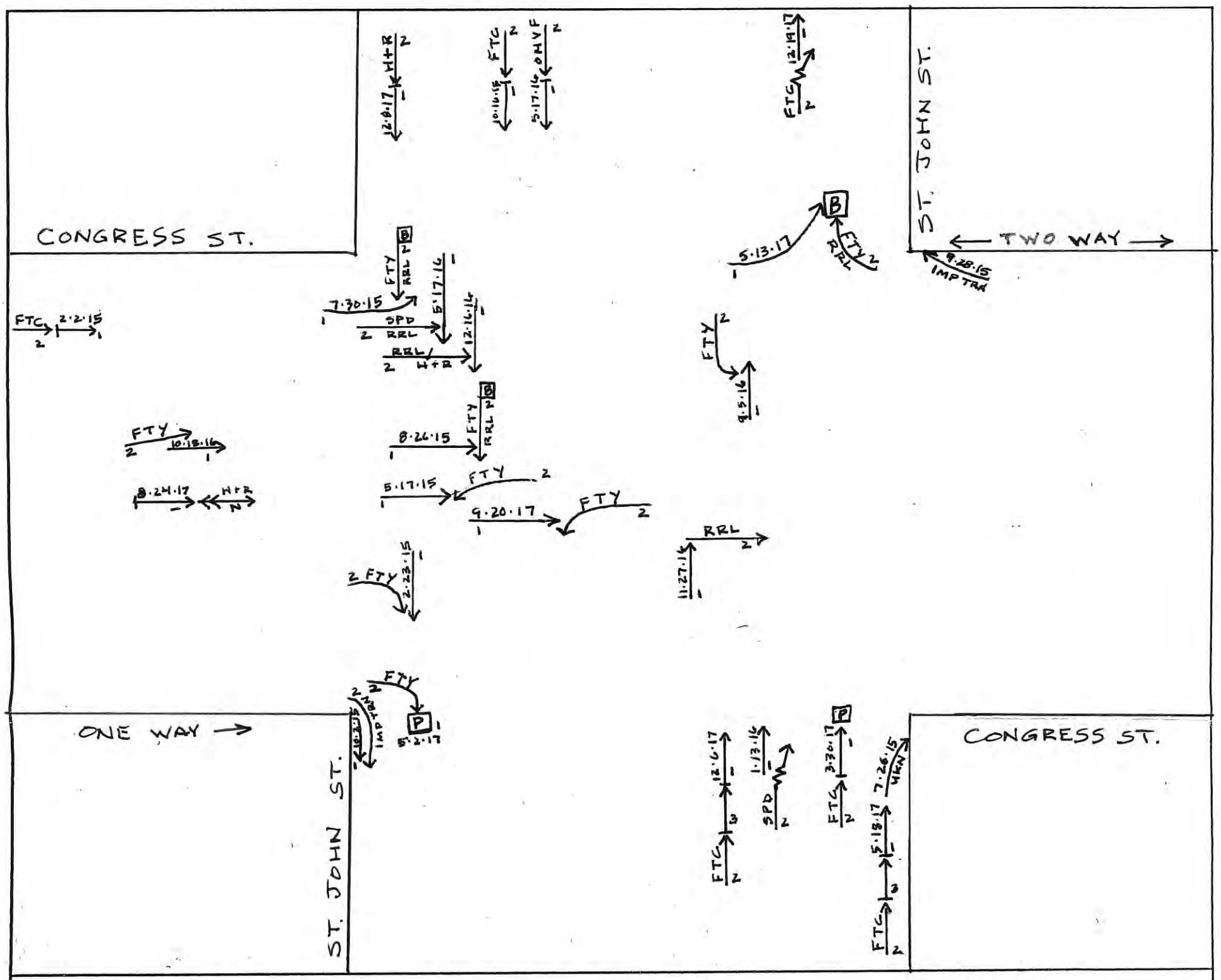
COLLISION DIAGRAM

SHEET 1 OF 2

LOCATION Intersection of Congress Street & St. John Street

TOWN Portland, Maine NODE NO(S) 16765

YEARS REVIEWED 2015 - 2017 DATE PREPARED Nov. 16, 2018



CRITICAL RATE FACTOR _____ EQUIV. PROP. DAMAGE ACC/YEAR _____ ACC/MEV _____

LIGHT

1. DAWN (MORNING) 2. DAYLIGHT 3. DUSK (EVENING)
4. DARK (ST. LIGHTS ON) 5. DARK (NO ST. LIGHTS) 6. DARK (ST. LIGHTS OFF)
7. OTHER

ROAD SURFACE

1. DRY 2. WET 3. SNOW/SLUSH–SANDED
4. ICE/PACKED SNOW–SANDED 5. MUDDY 6. DEBRIS
7. OILY 8. SNOW/SLUSH–NOT SANDED 9. ICE–PKD. SNOW–NOT SANDED
10. OTHER

APPARENT CONTRIBUTING FACTORS – HUMAN

1. NO IMPROPER ACTION 2. FAIL TO YLD. RIGHT OF WAY 3. ILLEGAL UNSAFE SPEED
4. FOLLOW TOO CLOSE 5. DISREGARD TRAFFIC CONTROL DEVICE
6. DRIVING LEFT OF CENTER–NO PASSING 7. IMPROPER PASS–OVERTAKING
8. IMP. UNSAFE LANE CHANGE 9. IMP. PARKING START/STOP 10. IMPROPER TURN
11. UNSAFE BACKING 12. NO SIGNAL OR IMP. SIGNAL 13. IMPEDING TRAFFIC
14. DRIVER INATTENTION–DISTRACTION 15. DRIVER INEXPERIENCE
16. PEDEST. VIOLATION ERROR 17. PHYSICAL IMPAIRMENT 18. VISION OBSCURED–WINDSHIELD GLASS
19. VISION OBSCURED–SUN/HEADLIGHTS
20. OTHER VISION OBSCUREMENT 30. OTHER HUMAN VIOLATION FACTOR
31. HIT AND RUN 51. UNKNOWN

– VEHICULAR

41. DEFECTIVE BRAKES 42. DEFECTIVE TIRE/FAILURE 43. DEFECTIVE LIGHTS
44. DEFECTIVE SUSPENSION OR FACTOR 45. DEFECTIVE STEERING 50. OTHER VEHICLE DEFECT
51. UNKNOWN

SYMBOLS

ANGLE, BACKING, FIXED OBJECT, HEAD ON, OVERTURN, PARKED VEHICLE, PEDESTRIAN, REAR END, SIDE SWIPE, TURNING MOVE, CHANGE LANE, OUT OF CONTROL, FATAL ACCIDENT, VEHICLE (MOVING), BICYCLE (B), ANIMAL (A), SLED (S)

WEATHER

C – CLEAR
SL – SLEET
F – FOG
S – SNOW
R – RAIN
CL – CLOUDY
XW = CROSS WINDS

INJURIES

K – FATAL
A – INCAPACITATING
B – NON–INCAPACITATING
C – POSSIBLE INJURY

S:/SHEETS/COLLISION DIAGRAM.DWG

COLLISION DIAGRAM

SHEET 2 OF 2

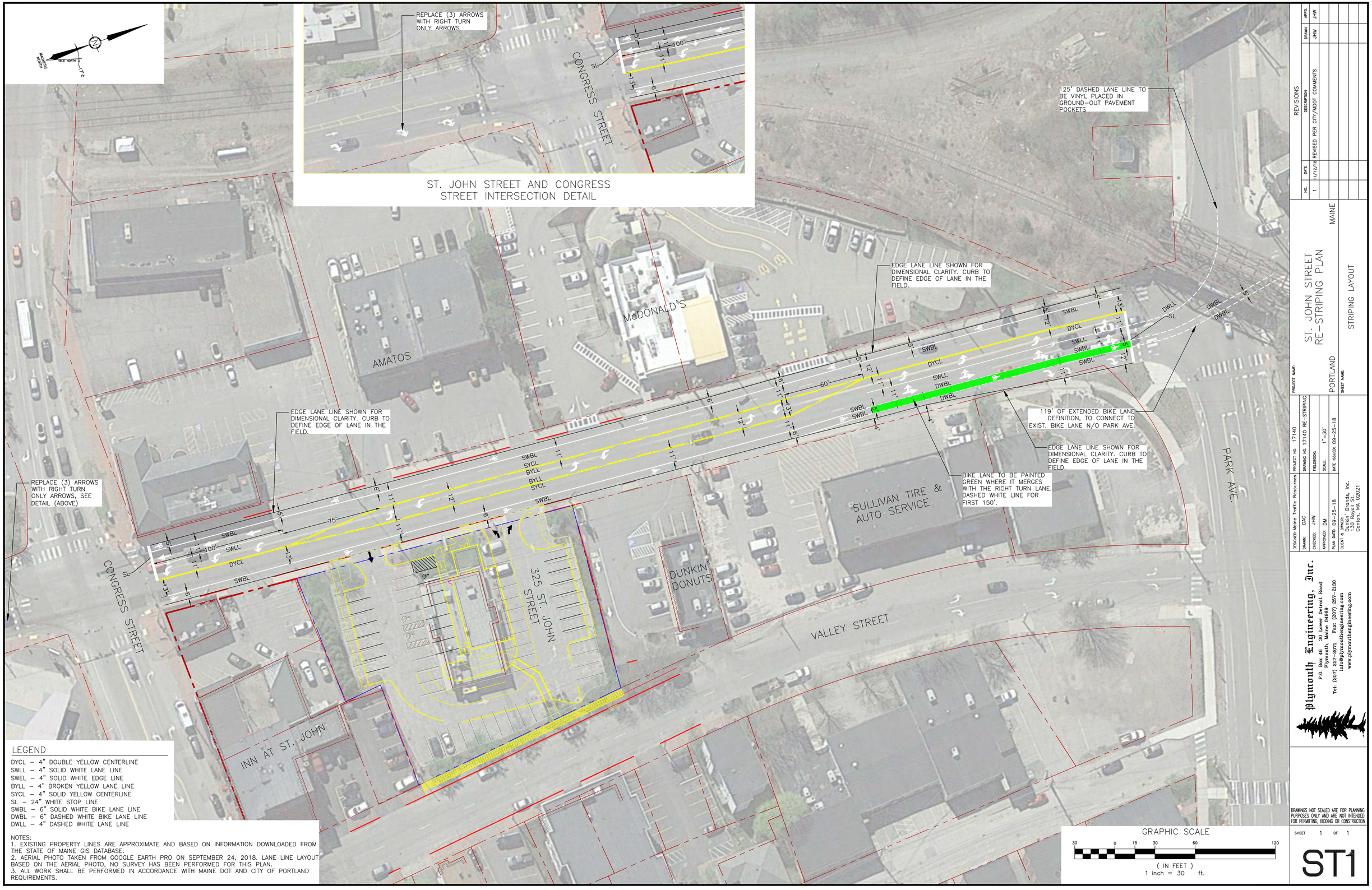
LOCATION Intersection of Congress Street & St. John Street

TOWN Portland, Maine NODE NO(S) 167165

YEARS REVIEWED 2015 - 2017 DATE PREPARED Nov. 16, 2018

REPORT NO.	DATE	TIME	INJURIES K	A	B	C	LIGHT	ROAD SURFACE	ACF	OTHER
15·000457	02·02·15	15:00					2	3	4	
15·000921	02·23·15	11:38					2	1	2	
15·001773	05·17·15	16:12					2	1	2	
15·002529	07·26·15	21:21					4	1	51	swerve to miss vehicle
15·002575	07·30·15	19:30			1		3	1	30	Cyclist
15·002891	08·26·15	07:24				1	2	1	30	Cyclist
15·003256	09·28·15	16:23					2	1	10	
15·003322	10·02·15	13:18					2	1	10	
15·003479	10·16·15	13:19					2	1	4	
16·000137	01·13·16	08:55					2	3	3	
16·001002	03·27·16	12:50					2	1	3	
16·001459	05·17·16	08:00					2	1	30	
16·002712	09·05·16	06:00					2	1	2	
16·003213	10·18·16	06:53					2	1	2	
16·003632	11·27·16	17:25					4	1	5	Ran Red Light
16·003853	12·16·16	21:30					4	1	31	
17·001104	03·30·17	18:47					2	1	4	
17·001440	05·02·17	14:50				1	2	2	2	Pedestrian
17·001571	05·13·17	10:45				1	2	1	5	Cyclist
17·001623	05·18·17	16:55					2	1	4	
17·002694	08·24·17	08:25					2	1	31	
17·002991	09·20·17	05:38			1		4	2	2	
17·003791	12·06·17	14:21					2	1	4	
17·003814	12·08·17	13:26					2	1	31	
17·003968	12·19·17	07:34					2	3	4	

SHEETS/COLLISION DIAGRAM.DWG



LEGEND

DYCL – 4" DOUBLE YELLOW CENTERLINE
SWLL – 4" SOLID WHITE LANE LINE
SWEL – 4" SOLID WHITE EDGE LINE
BYLL – 4" BROKEN YELLOW LANE LINE
SYCL – 4" SOLID YELLOW CENTERLINE
SL – 24" WHITE STOP LINE
SWBL – 6" SOLID WHITE BIKE LANE LINE
DWBL – 6" DASHED WHITE BIKE LANE LINE
DWLL – 4" DASHED WHITE LANE LINE

NOTES:
1. EXISTING PROPERTY LINES ARE APPROXIMATE AND BASED ON INFORMATION DOWNLOADED FROM THE STATE OF MAINE GIS DATABASE.
2. AERIAL PHOTO TAKEN FROM GOOGLE EARTH PRO ON SEPTEMBER 24, 2018. LANE LINE LAYOUT BASED ON THE AERIAL PHOTO, NO SURVEY HAS BEEN PERFORMED FOR THIS PLAN.
3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH MAINE DOT AND CITY OF PORTLAND REQUIREMENTS.

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

REVISIONS

NO.	DATE	DESCRIPTION	DRAWN	APPD.
1	11/12/18	REVISED PER CITY/MDOT COMMENTS	JHW	JHW

PROJECT NAME:
ST. JOHN STREET RE-STRIPING PLAN
PORTLAND MAINE

SHEET NAME:
STRIPING LAYOUT

DESIGNED: Maine Traffic Resources
DRAWN: DAC
CHECKED: JHW
APPROVED: DM
PLAN DATE: 09-25-18

PROJECT NO. 17140
DRAWING NO. 17140 RE-STRIPING
FIELDBOOK:
SCALE: 1"=30'
DATE ISSUED: 09-25-18

CLIENT & OWNER:
Dunkin' Brands, Inc.
130 Royall Street
Canton, MA 02021

Plymouth Engineering, Inc.
P.O. Box 46 30 Lower Detroit Road
Plymouth, Maine 04969
Tel: (207) 257-2071 Fax: (207) 257-2130
info@plymouthengineering.com
www.plymouthengineering.com

DRAWINGS NOT SEALED ARE FOR PLANNING PURPOSES ONLY AND ARE NOT INTENDED FOR PERMITTING, BIDDING OR CONSTRUCTION

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	7646	7538	7768	7754	7712	7687
Vehs Exited	7626	7569	7729	7698	7683	7659
Starting Vehs	239	271	247	222	259	242
Ending Vehs	259	240	286	278	288	271
Denied Entry Before	2	1	0	0	1	0
Denied Entry After	3	2	2	1	3	0
Travel Distance (mi)	5425	5384	5489	5511	5512	5464
Travel Time (hr)	275.8	275.2	276.8	283.5	278.1	277.9
Total Delay (hr)	79.3	80.8	77.7	84.1	78.6	80.1
Total Stops	9140	9229	9289	9366	9326	9268
Fuel Used (gal)	197.0	195.8	198.4	200.6	199.3	198.2

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	7646	7538	7768	7754	7712	7687
Vehs Exited	7626	7569	7729	7698	7683	7659
Starting Vehs	239	271	247	222	259	242
Ending Vehs	259	240	286	278	288	271
Denied Entry Before	2	1	0	0	1	0
Denied Entry After	3	2	2	1	3	0
Travel Distance (mi)	5425	5384	5489	5511	5512	5464
Travel Time (hr)	275.8	275.2	276.8	283.5	278.1	277.9
Total Delay (hr)	79.3	80.8	77.7	84.1	78.6	80.1
Total Stops	9140	9229	9289	9366	9326	9268
Fuel Used (gal)	197.0	195.8	198.4	200.6	199.3	198.2

1: St. John Street & Margaritas Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	3.4	0.0	0.0	0.2
Total Del/Veh (s)	8.1	3.1	2.0	2.8
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

3: St. John Street & Garage Access/D St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.4	0.1	0.5	0.1	0.4
Total Del/Veh (s)	15.0	6.9	5.9	6.8	7.9
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

5: Valley & St. John Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	2.7	0.0	2.1	0.8
Total Del/Veh (s)	12.7	16.2	13.7	16.4	14.2
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

7: St. John Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.6	0.3	1.2	0.0	0.6
Total Del/Veh (s)	30.7	17.5	42.3	26.9	30.8
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

12: Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	1.3	1.4	23.5	1.8
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

13: Fore River Pkwy & Valley Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.4	0.0	0.3
Total Del/Veh (s)	24.6	17.2	11.6	19.9
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

16: Valley & Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	2.7	0.2
Total Del/Veh (s)	1.9	0.9	10.3	2.3
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

19: St. John Street & Park Avenue Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	1.3	0.0	0.7	0.6
Total Del/Veh (s)	31.4	20.6	24.1	25.0
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

24: Gilman Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.3	0.0	0.1	0.1	0.2
Total Del/Veh (s)	1.3	1.0	12.8	10.8	2.1
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

29: Bramhall Street/Deering Avenue & Congress Street Performance by approach

Approach	EB	WB	NE	SW	All
Denied Del/Veh (s)	0.0	1.9	2.2	2.8	1.2
Total Del/Veh (s)	7.3	13.3	13.1	10.0	9.9
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

35: Visitor Garage/Forest Street Garage & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1	0.1
Total Del/Veh (s)	2.0	1.9	16.6	5.3	2.3
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	35.3
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: St. John Street & Margaritas

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	38	62	158	61
Average Queue (ft)	10	31	29	4
95th Queue (ft)	34	54	91	26
Link Distance (ft)	620		678	670
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		125		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: St. John Street & Garage Access/D St

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	158	82	36	54	128	74	196
Average Queue (ft)	67	29	11	23	52	25	83
95th Queue (ft)	119	62	35	46	104	63	150
Link Distance (ft)	564		489		1605		678
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		150		100		75	
Storage Blk Time (%)	0				1	0	6
Queuing Penalty (veh)	0				0	1	2

Intersection: 5: Valley & St. John Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	LT	TR
Maximum Queue (ft)	302	132	254	93	170	270	48	54
Average Queue (ft)	64	70	131	24	77	136	13	13
95th Queue (ft)	190	116	211	59	144	229	40	41
Link Distance (ft)	1605			1012	268	268	937	
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						1		
Storage Bay Dist (ft)		110	335					265
Storage Blk Time (%)	1	1						
Queuing Penalty (veh)	2	1						

Intersection: 7: St. John Street & Congress Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	R	T	R	L	T
Maximum Queue (ft)	644	847	315	98	123	428	168	124	245
Average Queue (ft)	187	355	186	44	59	204	38	75	127
95th Queue (ft)	403	689	359	87	107	369	147	136	219
Link Distance (ft)	1767	1767			178	670			796
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			290	80			175	100	
Storage Blk Time (%)		13	0	3	3	20	0	6	13
Queuing Penalty (veh)		43	1	5	2	8	0	18	12

Intersection: 12: Congress Street

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	4	112	73
Average Queue (ft)	0	14	23
95th Queue (ft)	3	66	58
Link Distance (ft)	169	202	174
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 13: Fore River Pkwy & Valley

Movement	EB	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	L	L	T	T	T	T	R	L	R	R
Maximum Queue (ft)	375	394	349	319	187	192	91	146	138	135
Average Queue (ft)	177	250	105	105	127	110	40	60	70	72
95th Queue (ft)	394	428	318	240	175	169	80	110	112	111
Link Distance (ft)			2719	2719	1454	1454		268	268	268
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	430	430					415			
Storage Blk Time (%)	2	4	0							
Queuing Penalty (veh)	8	22	2							

Intersection: 16: Valley & Congress Street

Movement	EB	EB	WB	NB	NB
Directions Served	L	TR	L	LT	R
Maximum Queue (ft)	24	24	46	62	63
Average Queue (ft)	2	1	13	23	28
95th Queue (ft)	13	12	37	52	55
Link Distance (ft)		178		315	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	50		50		170
Storage Blk Time (%)		0	0		
Queuing Penalty (veh)		0	1		

Intersection: 19: St. John Street & Park Avenue

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	150	215	250	198	395	135	401	80
Average Queue (ft)	73	106	134	110	171	110	181	66
95th Queue (ft)	132	180	203	198	295	170	329	105
Link Distance (ft)			1678		796		2255	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	95	95		175		110		55
Storage Blk Time (%)	4	10	26	0	19	1	36	5
Queuing Penalty (veh)	13	31	101	1	90	4	60	20

Intersection: 24: Gilman Street & Congress Street

Movement	EB	WB	NB	SB
Directions Served	TR	L	LTR	LTR
Maximum Queue (ft)	62	47	88	48
Average Queue (ft)	5	12	37	17
95th Queue (ft)	31	37	68	45
Link Distance (ft)	124		1063	624
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)		65		
Storage Blk Time (%)		0		
Queuing Penalty (veh)		1		

Intersection: 29: Bramhall Street/Deering Avenue & Congress Street

Movement	EB	EB	WB	WB	NE	NE	SW	SW
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	51	226	165	90	104	125	125	75
Average Queue (ft)	17	101	46	70	48	60	35	45
95th Queue (ft)	44	174	126	102	96	111	83	77
Link Distance (ft)	965		1272		1186		795	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		400		65		135		50
Storage Blk Time (%)			0	12		0	2	7
Queuing Penalty (veh)			1	4		0	3	5

Intersection: 35: Visitor Garage/Forest Street Garage & Congress Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	104	29	48	30
Average Queue (ft)	32	2	19	5
95th Queue (ft)	82	16	46	22
Link Distance (ft)	202	965	508	434
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 464

Intersection: 3: St. John Street & Garage Access/D St

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	45.0	5.0	6.5	34.0	5.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	Min	None	None	Min	None
Avg. Green (s)	27.9	5.0	5.7	22.2	5.0
g/C Ratio	-0.01	-0.01	-0.01	NA	-0.01
Cycles Skipped (%)	9	9	75	0	9
Cycles @ Minimum (%)	0	91	7	1	91
Cycles Maxed Out (%)	9	91	7	20	91
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Valley & St. John Street

Phase	2	3	4	6	8
Movement(s) Served	NBTL	WBL	EBTL	SBTL	WBT
Maximum Green (s)	26.0	21.0	18.0	26.0	44.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	None	None	None	None	None
Avg. Green (s)	13.8	16.2	11.5	13.8	30.6
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	6	4	12	6	3
Cycles @ Minimum (%)	0	0	1	0	0
Cycles Maxed Out (%)	4	29	16	4	6
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 7: St. John Street & Congress Street

Phase	1	2	3	4	5	6	8
Movement(s) Served	EBL	WBL	SBL	NBT	WBL	EBTL	SBT
Maximum Green (s)	19.1	15.7	4.7	17.7	5.0	29.8	29.2
Minimum Green (s)	8.0	8.0	3.0	8.0	5.0	8.0	5.0
Recall	None	Min	None	None	None	Min	None
Avg. Green (s)	16.3	15.3	4.9	17.2	5.2	30.3	27.6
g/C Ratio	NA	NA	-0.01	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	9	0	38	0	0
Cycles @ Minimum (%)	2	23	0	0	62	0	0
Cycles Maxed Out (%)	49	60	91	79	62	94	71
Cycles with Peds (%)	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 13: Fore River Pkwy & Valley

Phase	4	6	7	8
Movement(s) Served	EBT	SBL	EBL	WBT
Maximum Green (s)	39.0	11.0	17.0	17.0
Minimum Green (s)	5.0	5.0	5.0	5.0
Recall	None	None	None	None
Avg. Green (s)	38.9	10.3	16.8	15.9
g/C Ratio	-0.01	-0.01	NA	NA
Cycles Skipped (%)	3	3	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	60	70	92	66
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 19: St. John Street & Park Avenue

Phase	2	6	8
Movement(s) Served	NBTL	SBTL	WBTL
Maximum Green (s)	15.0	20.0	10.0
Minimum Green (s)	3.0	3.0	3.0
Recall	Min	Min	Min
Avg. Green (s)	14.7	18.1	10.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	90	65	98
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 29: Bramhall Street/Deering Avenue & Congress Street

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	SWL	NETL	WBL	EBTL	NEL	SWTL	EBL	WBTL
Maximum Green (s)	5.5	13.5	5.5	17.5	5.5	13.5	5.5	17.5
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall	None	Max	None	None	None	Max	None	None
Avg. Green (s)	5.6	15.0	6.7	14.3	5.4	16.3	7.5	14.6
g/C Ratio	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Cycles Skipped (%)	60	2	77	6	71	2	80	6
Cycles @ Minimum (%)	1	0	11	0	10	0	0	0
Cycles Maxed Out (%)	35	98	11	38	17	98	20	33
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	7:10	7:10	7:10	7:10	7:10	7:10
Total Time (min)	13	13	13	13	13	13
Time Recorded (min)	10	10	10	10	10	10
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1312	1361	1422	1347	1303	1354
Vehs Exited	1256	1336	1384	1268	1261	1302
Starting Vehs	217	241	248	228	209	227
Ending Vehs	273	266	286	307	251	272
Denied Entry Before	1	1	1	3	3	1
Denied Entry After	33	5	6	11	0	9
Travel Distance (mi)	773	800	844	789	747	790
Travel Time (hr)	47.2	45.2	48.0	45.9	39.3	45.1
Total Delay (hr)	18.9	16.1	17.3	17.2	12.1	16.3
Total Stops	1821	1757	1918	1743	1493	1748
Fuel Used (gal)	30.5	30.6	32.5	30.5	27.7	30.4

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	7:10
Total Time (min)	10

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	1312	1361	1422	1347	1303	1354
Vehs Exited	1256	1336	1384	1268	1261	1302
Starting Vehs	217	241	248	228	209	227
Ending Vehs	273	266	286	307	251	272
Denied Entry Before	1	1	1	3	3	1
Denied Entry After	33	5	6	11	0	9
Travel Distance (mi)	773	800	844	789	747	790
Travel Time (hr)	47.2	45.2	48.0	45.9	39.3	45.1
Total Delay (hr)	18.9	16.1	17.3	17.2	12.1	16.3
Total Stops	1821	1757	1918	1743	1493	1748
Fuel Used (gal)	30.5	30.6	32.5	30.5	27.7	30.4

1: St. John Street & Margaritas Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	2.5	0.0	0.0	0.3
Total Del/Veh (s)	11.7	3.7	2.2	3.9
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

3: St. John Street & Garage Access/D St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.7	0.1	0.3	0.1	0.7
Total Del/Veh (s)	11.7	7.1	8.2	10.6	10.2
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

5: Valley & St. John Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	2.5	0.0	1.4	0.8
Total Del/Veh (s)	10.9	14.1	12.5	20.6	12.6
Denied Entry Before	0	1	0	0	1
Denied Entry After	0	0	0	0	0

7: St. John Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.4	0.4	12.9	0.0	4.2
Total Del/Veh (s)	25.8	25.1	50.3	26.1	32.9
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	7	0	7

12: Gilman Street & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.1
Total Del/Veh (s)	1.1	1.7	19.9	12.9	2.8
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

13: Fore River Pkwy & Valley Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.8	0.4	0.0	0.4
Total Del/Veh (s)	18.1	18.6	11.8	16.5
Denied Entry Before	0	0	0	0
Denied Entry After	1	0	0	1

18: Bramhall Street/Deering Avenue & Congress Street Performance by approach

Approach	EB	WB	NE	SW	All
Denied Del/Veh (s)	0.0	1.4	2.6	3.2	1.5
Total Del/Veh (s)	13.7	22.4	13.5	13.7	15.1
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

19: St. John Street & Park Avenue Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	1.6	1.5	1.1	1.5
Total Del/Veh (s)	40.0	31.4	27.0	34.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	1	0	1

22: Proposed Drop Off & Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.2	1.8	19.9	2.2
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

24: Valley & Congress Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.0	1.8	0.2
Total Del/Veh (s)	2.1	1.0	14.4	3.0
Denied Entry Before	0	0	0	0
Denied Entry After	0	0	0	0

32: Visitor Garage/Forest Street Garage & Congress Street Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.1	0.1	0.1
Total Del/Veh (s)	1.2	2.0	15.6	6.9	2.6
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Denied Del/Veh (s)	2.6
Total Del/Veh (s)	35.1
Denied Entry Before	1
Denied Entry After	9

Intersection: 1: St. John Street & Margaritas

Movement	EB	EB	NB	SB
Directions Served	L	R	LT	TR
Maximum Queue (ft)	60	46	100	4
Average Queue (ft)	36	33	42	1
95th Queue (ft)	67	50	116	8
Link Distance (ft)	549		677	671
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		125		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: St. John Street & Garage Access/D St

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	150	77	34	43	143	63	156
Average Queue (ft)	100	48	11	11	80	32	103
95th Queue (ft)	178	115	36	54	159	71	169
Link Distance (ft)	559		663		1605		677
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		150		100		75	
Storage Blk Time (%)	2	0			2	1	13
Queuing Penalty (veh)	3	0			0	5	5

Intersection: 5: Valley & St. John Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	LT	TR
Maximum Queue (ft)	81	114	201	33	85	140	34	36
Average Queue (ft)	49	79	131	21	58	89	11	10
95th Queue (ft)	97	125	217	46	99	160	37	36
Link Distance (ft)	1605			988	270	270	1083	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		110	335					265
Storage Blk Time (%)	0	2						
Queuing Penalty (veh)	0	2						

Intersection: 7: St. John Street & Congress Street

Movement	EB	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	R	L	R	T	R	L	T
Maximum Queue (ft)	209	352	129	74	123	510	197	117	238
Average Queue (ft)	148	248	58	38	92	393	87	69	139
95th Queue (ft)	249	405	153	95	153	672	237	129	260
Link Distance (ft)	1767	1767			180	671			794
Upstream Blk Time (%)					0	1			
Queuing Penalty (veh)					1	8			
Storage Bay Dist (ft)			290	80			175	100	
Storage Blk Time (%)		4	0	0	15	41	0	2	14
Queuing Penalty (veh)		7	0	0	7	32	1	7	11

Intersection: 12: Gilman Street & Congress Street

Movement	EB	WB	NB	SB
Directions Served	TR	L	LTR	LTR
Maximum Queue (ft)	34	66	65	43
Average Queue (ft)	9	29	42	21
95th Queue (ft)	36	65	71	51
Link Distance (ft)	122		1063	624
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		65		
Storage Blk Time (%)		2		
Queuing Penalty (veh)		7		

Intersection: 13: Fore River Pkwy & Valley

Movement	EB	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	L	L	T	T	T	T	R	L	R	R
Maximum Queue (ft)	213	255	138	73	209	191	52	79	127	126
Average Queue (ft)	104	178	66	50	164	143	28	52	92	95
95th Queue (ft)	238	300	179	84	257	241	56	90	136	132
Link Distance (ft)			1519	1519	1275	1275		270	270	270
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	430	430					415			
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 18: Bramhall Street/Deering Avenue & Congress Street

Movement	EB	EB	WB	WB	NE	NE	SW	SW
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	134	183	133	87	113	128	188	75
Average Queue (ft)	78	121	82	65	43	85	103	69
95th Queue (ft)	153	189	180	100	133	146	213	86
Link Distance (ft)	966		1272		1186		795	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		400		65		135		50
Storage Blk Time (%)			5	16		2	5	28
Queuing Penalty (veh)			9	16		1	20	25

Intersection: 19: St. John Street & Park Avenue

Movement	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	138	218	321	200	558	135	188	78
Average Queue (ft)	96	193	270	170	385	118	134	55
95th Queue (ft)	172	268	448	250	740	179	213	99
Link Distance (ft)			1640		794		1376	
Upstream Blk Time (%)					0			
Queuing Penalty (veh)					3			
Storage Bay Dist (ft)	95	95		175		110		55
Storage Blk Time (%)	12	33	54	1	37	0	37	3
Queuing Penalty (veh)	52	141	287	9	225	2	41	8

Intersection: 22: Proposed Drop Off & Congress Street

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	4	90	57
Average Queue (ft)	1	34	32
95th Queue (ft)	8	118	70
Link Distance (ft)	170	201	194
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 24: Valley & Congress Street

Movement	EB	WB	WB	NB	NB
Directions Served	L	L	TR	LT	R
Maximum Queue (ft)	14	38	2	72	45
Average Queue (ft)	3	16	0	45	28
95th Queue (ft)	16	43	4	85	56
Link Distance (ft)			122	393	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	50	50			170
Storage Blk Time (%)		1			
Queuing Penalty (veh)		2			

Intersection: 32: Visitor Garage/Forest Street Garage & Congress Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	11	52	55	47
Average Queue (ft)	2	12	37	35
95th Queue (ft)	20	59	63	50
Link Distance (ft)	201	966	624	434
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 937

Intersection: 3: St. John Street & Garage Access/D St

Phase	2	4	5	6	8
Movement(s) Served	NBTL	EBTL	NBL	SBTL	WBTL
Maximum Green (s)	31.0	19.0	5.5	21.0	19.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	Min	None	None	Min	None
Avg. Green (s)	20.4	13.9	5.5	19.6	13.9
g/C Ratio	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	92	0	0
Cycles @ Minimum (%)	0	0	0	0	0
Cycles Maxed Out (%)	8	31	8	46	31
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 5: Valley & St. John Street

Phase	2	3	4	6	8
Movement(s) Served	NBTL	WBL	EBTL	SBTL	WBT
Maximum Green (s)	18.0	19.0	18.0	18.0	42.0
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0
Recall	None	None	None	None	None
Avg. Green (s)	12.0	15.3	13.2	12.0	34.5
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01
Cycles Skipped (%)	9	0	9	9	9
Cycles @ Minimum (%)	0	0	0	0	0
Cycles Maxed Out (%)	18	36	27	18	18
Cycles with Peds (%)	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 7: St. John Street & Congress Street

Phase	1	2	3	4	5	6	8
Movement(s) Served	EBL	WBL	SBL	NBT	WBL	EBTL	SBT
Maximum Green (s)	19.2	11.8	4.7	31.5	4.5	26.5	43.0
Minimum Green (s)	8.0	8.0	3.0	8.0	4.5	8.0	5.0
Recall	None	Min	None	None	None	Min	None
Avg. Green (s)	17.3	10.2	5.3	29.5	4.6	31.9	40.4
g/C Ratio	NA	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	0	50	0	0
Cycles @ Minimum (%)	0	57	0	0	33	0	0
Cycles Maxed Out (%)	57	29	100	71	50	83	71
Cycles with Peds (%)	0	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 13: Fore River Pkwy & Valley

Phase	4	6	7	8
Movement(s) Served	EBT	SBL	EBL	WBT
Maximum Green (s)	34.0	11.0	11.0	18.0
Minimum Green (s)	5.0	5.0	5.0	5.0
Recall	None	None	None	None
Avg. Green (s)	33.9	10.8	11.4	19.2
g/C Ratio	NA	NA	NA	NA
Cycles Skipped (%)	0	0	0	0
Cycles @ Minimum (%)	0	0	0	0
Cycles Maxed Out (%)	70	82	80	90
Cycles with Peds (%)	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 18: Bramhall Street/Deering Avenue & Congress Street

Phase	1	2	3	4	5	6	7	8
Movement(s) Served	SWL	NETL	WBL	EBTL	NEL	SWTL	EBL	WBTL
Maximum Green (s)	5.5	18.5	5.5	12.5	5.5	18.5	5.5	12.5
Minimum Green (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Recall	None	Max	None	None	None	Max	None	None
Avg. Green (s)	6.4	20.3	6.7	13.3	5.3	23.0	9.0	11.6
g/C Ratio	-0.01	NA	-0.01	-0.01	-0.01	NA	-0.01	-0.01
Cycles Skipped (%)	50	0	30	9	70	0	20	10
Cycles @ Minimum (%)	0	0	20	0	0	0	0	0
Cycles Maxed Out (%)	50	100	50	55	10	100	80	40
Cycles with Peds (%)	0	0	0	0	0	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Intersection: 19: St. John Street & Park Avenue

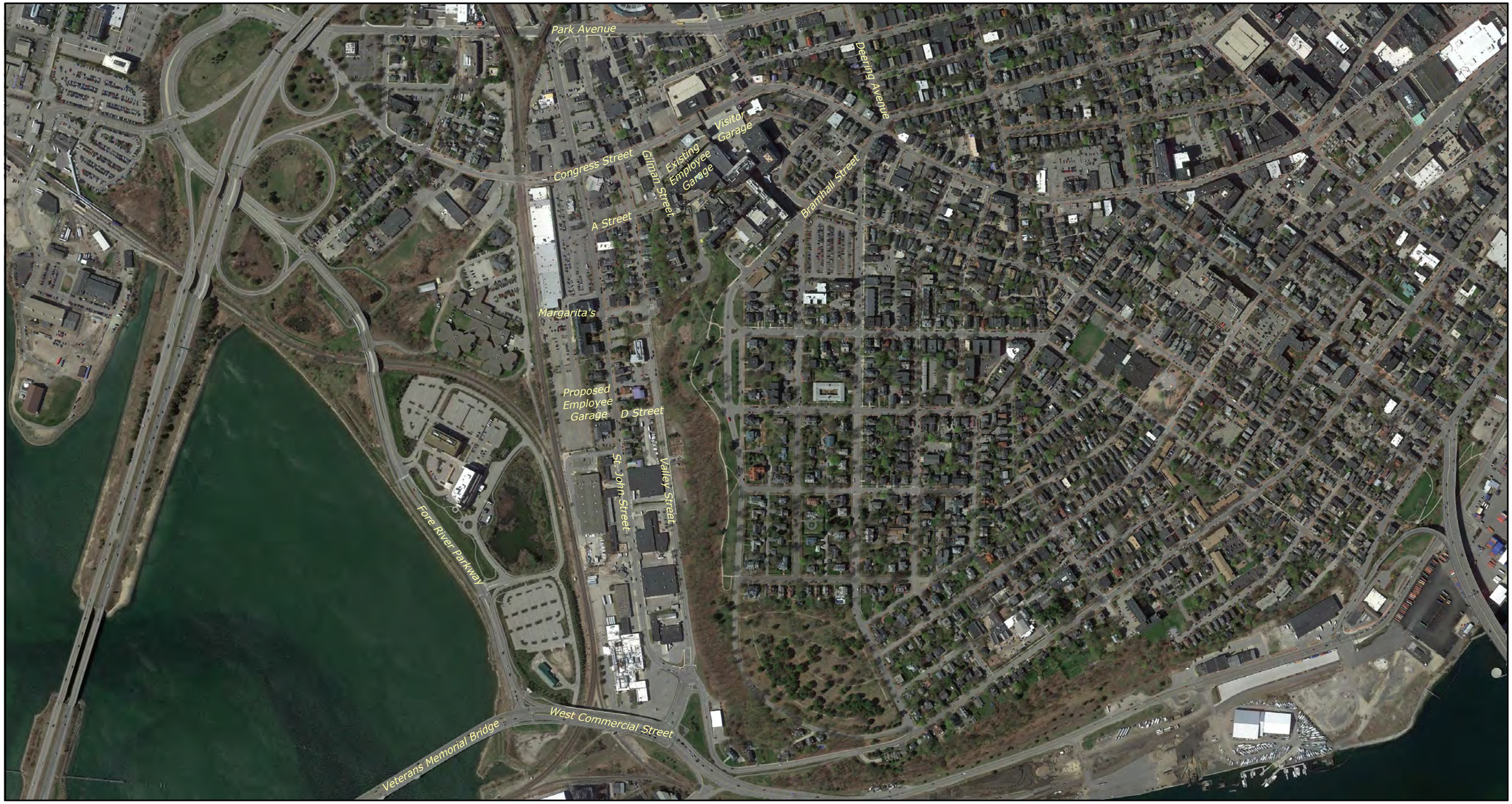
Phase	2	6	8
Movement(s) Served	NBTL	SBTL	WBTL
Maximum Green (s)	29.0	17.0	19.0
Minimum Green (s)	3.0	3.0	3.0
Recall	Min	Min	Min
Avg. Green (s)	31.4	16.3	19.0
g/C Ratio	NA	NA	NA
Cycles Skipped (%)	0	0	0
Cycles @ Minimum (%)	0	0	0
Cycles Maxed Out (%)	100	57	86
Cycles with Peds (%)	0	0	0

Controller Summary
Average Cycle Length (s): NA

Number of Complete Cycles : 0

Location Map

Figure No. 1



Bramhall St. - 22; MMC Congress Street Building
PORTLAND, MAINE

Design:	EAL	Scale:	NONE
Draft:		Date:	SEP 2018
Checked:	RED	File Name:	28866.01 - TIS Figures

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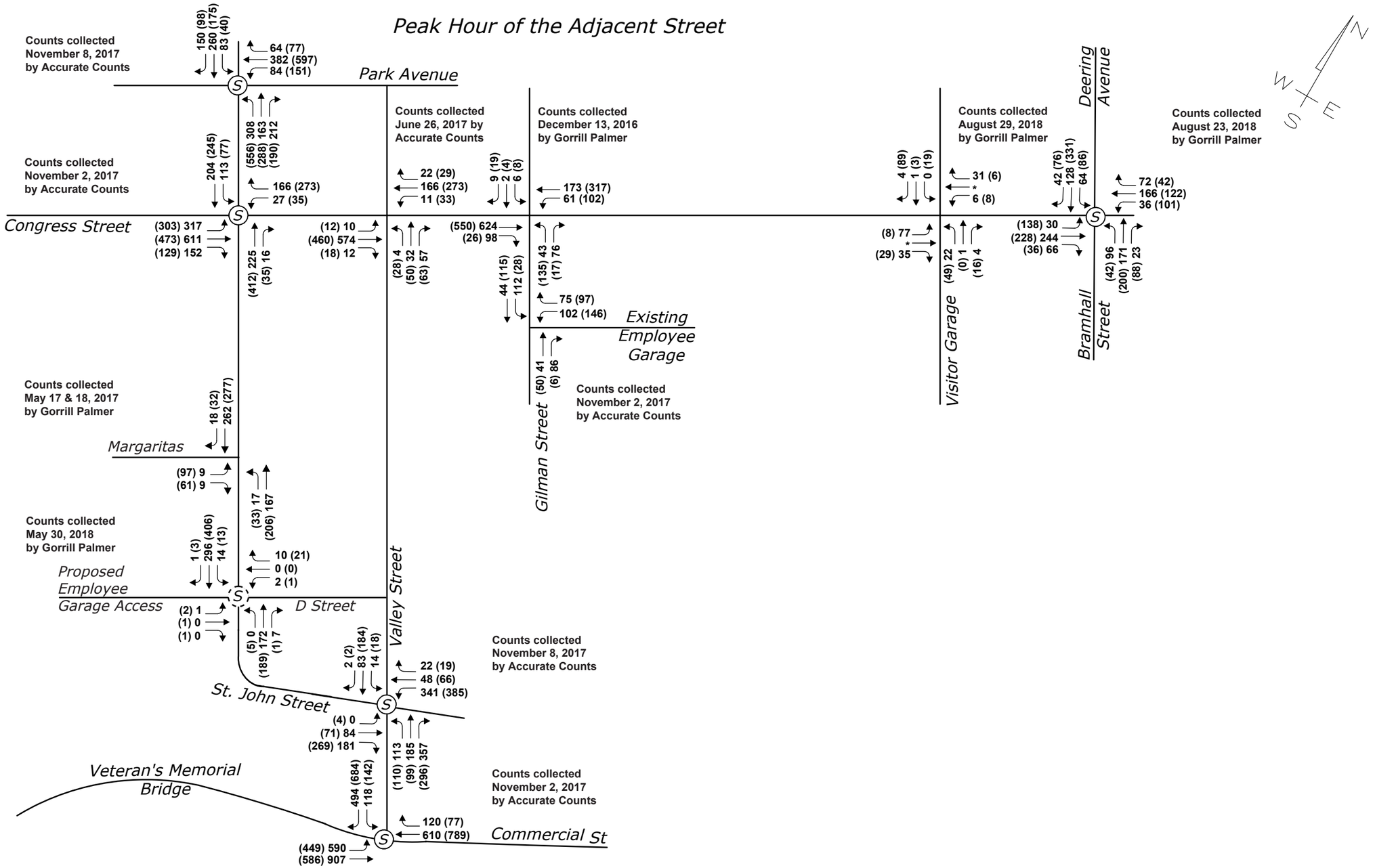

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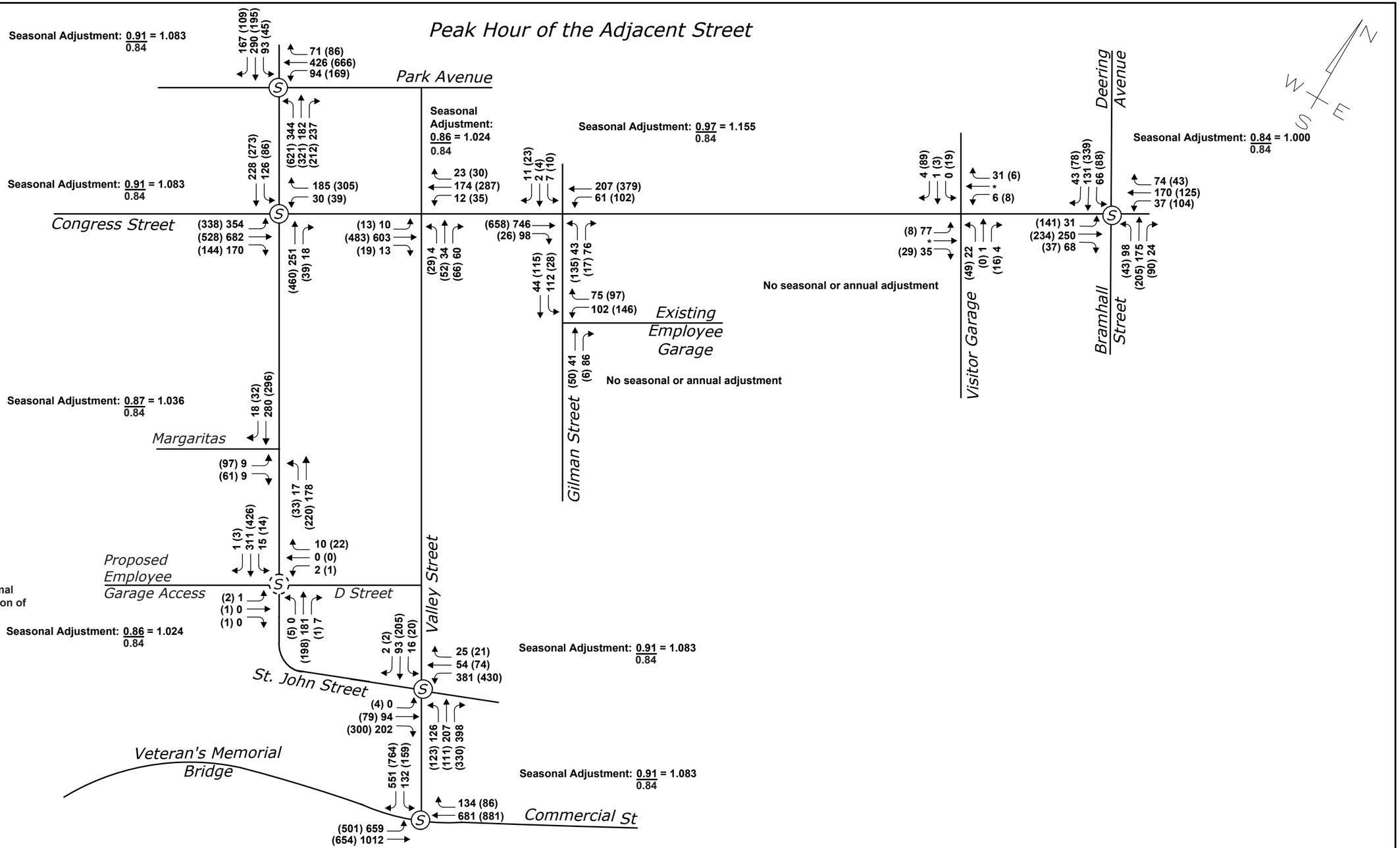
2023 Adjusted Volumes

Figure No. 3



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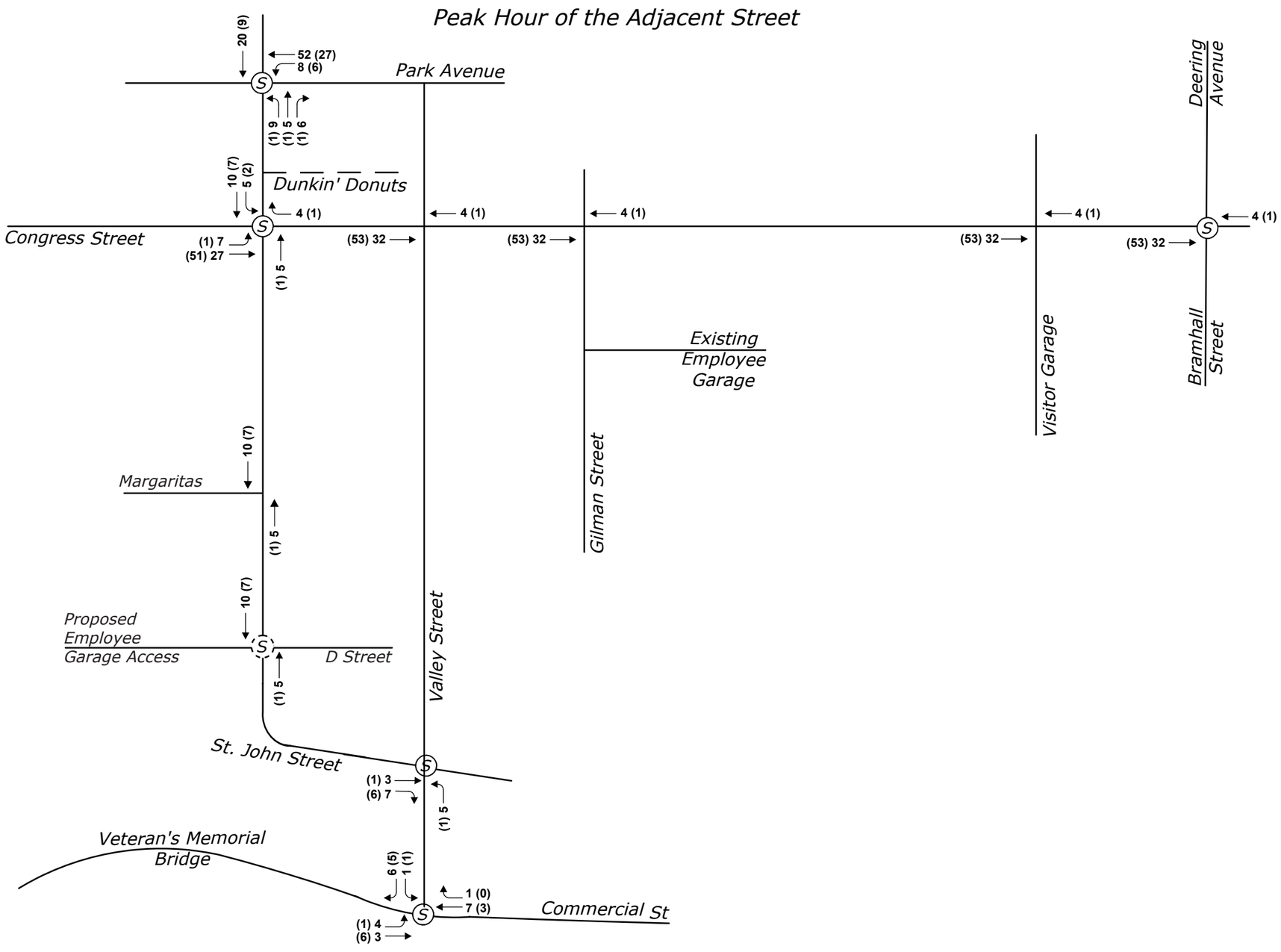
Other Development

Figure No. 4



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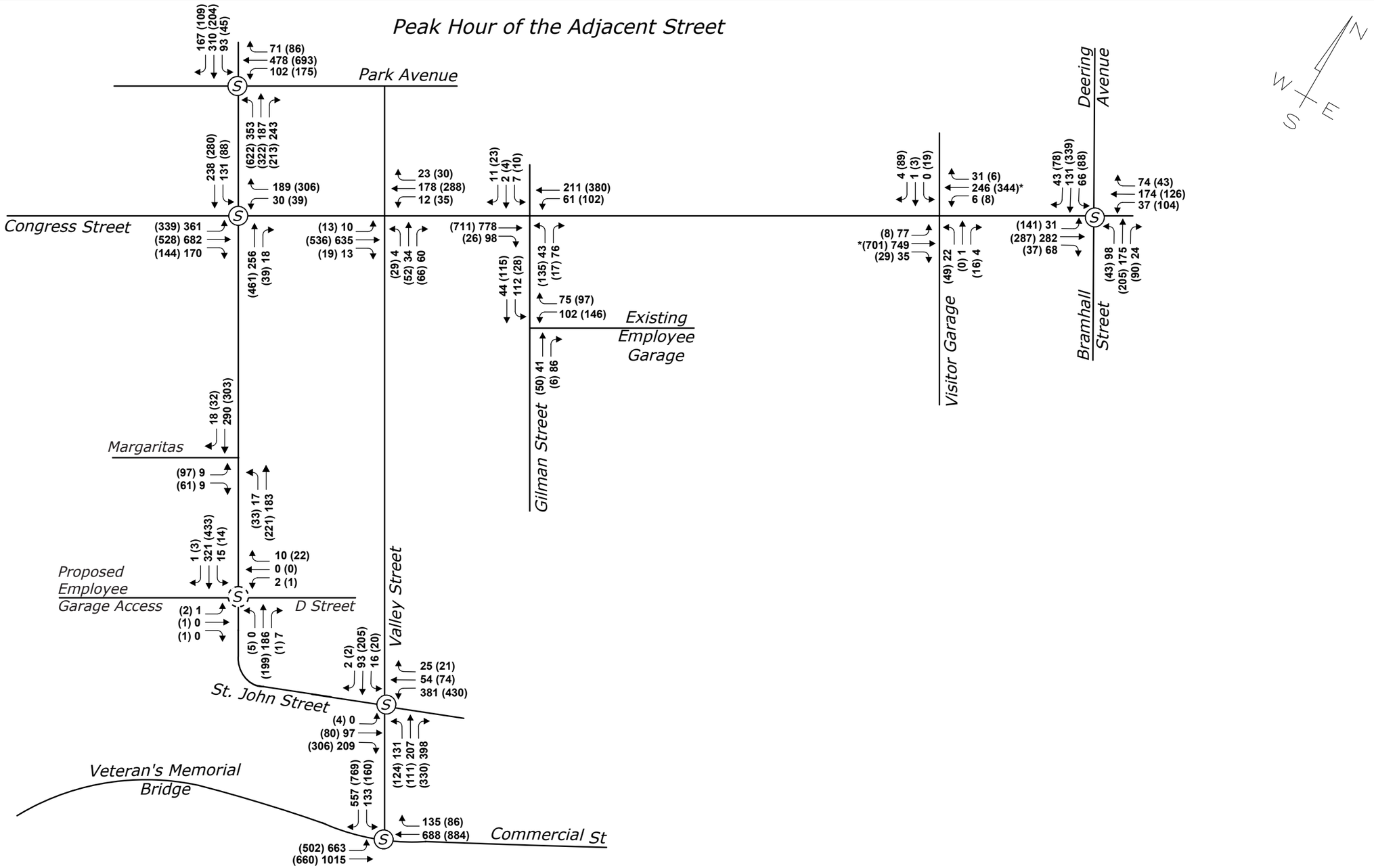
2023 Predevelopment

Figure No. 5



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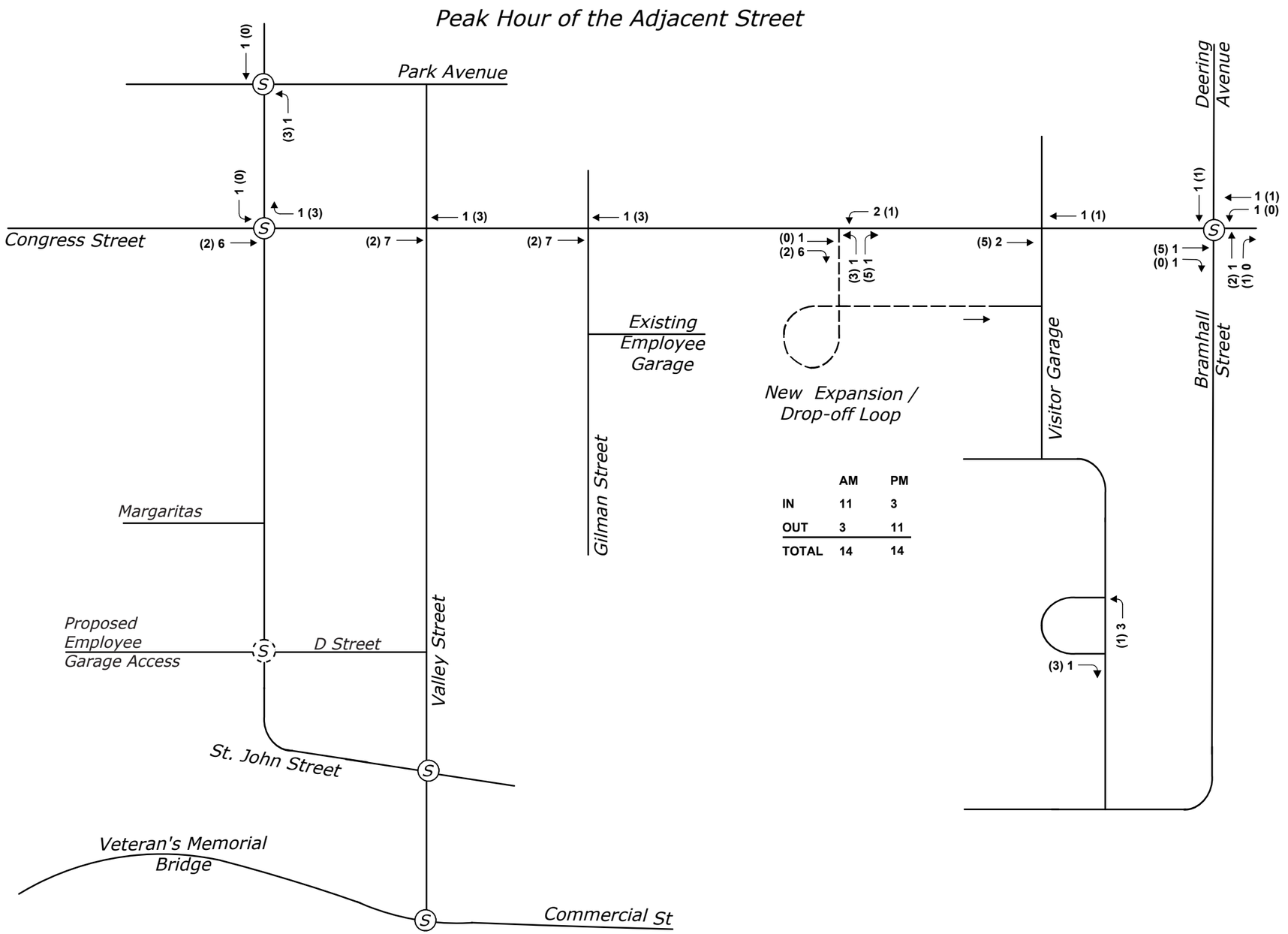
Phase 3 Patient/Visitor Assignment

Figure No. 6



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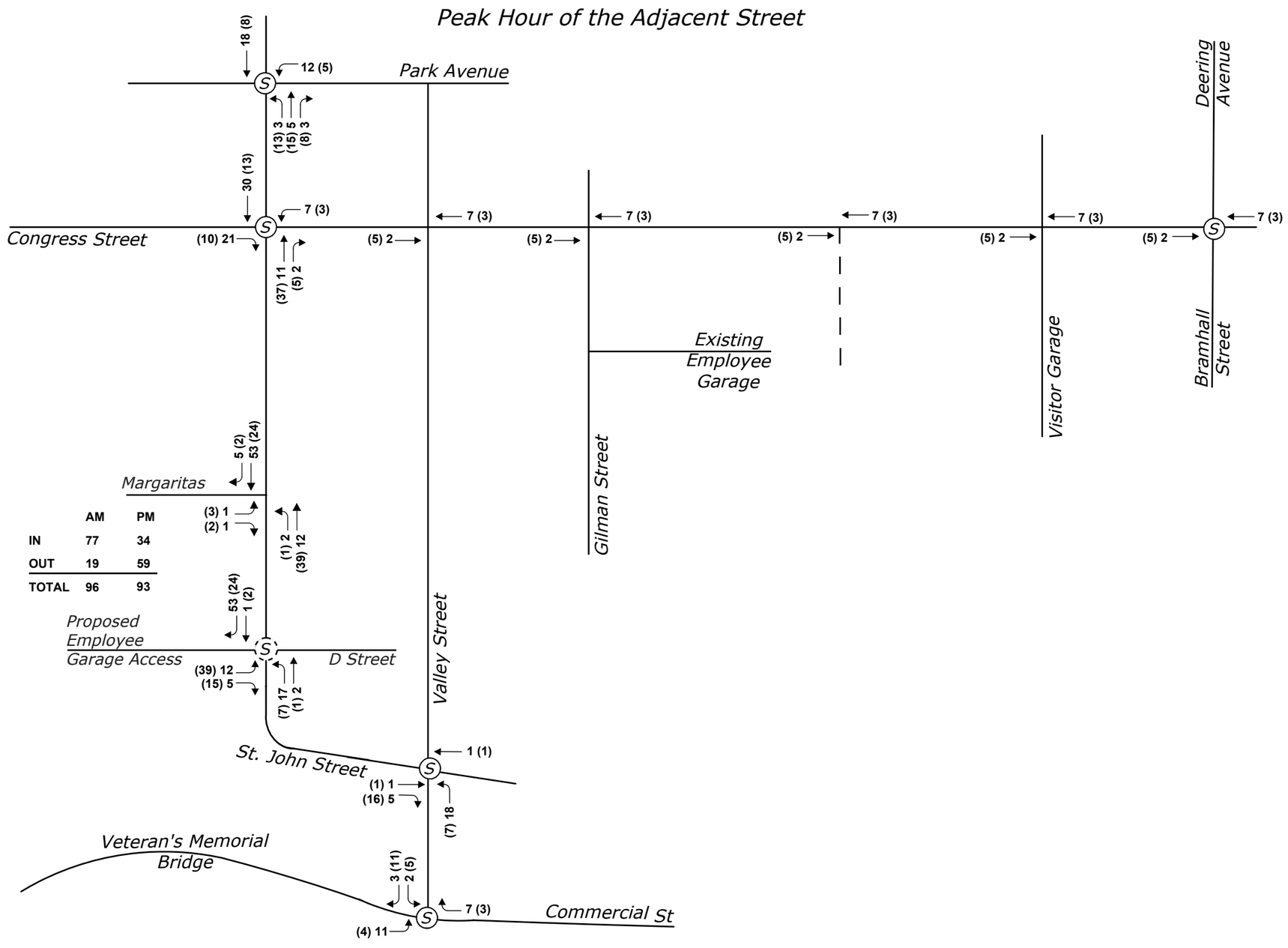
Phase 3 Employee Trip Assignment

Figure No. 7



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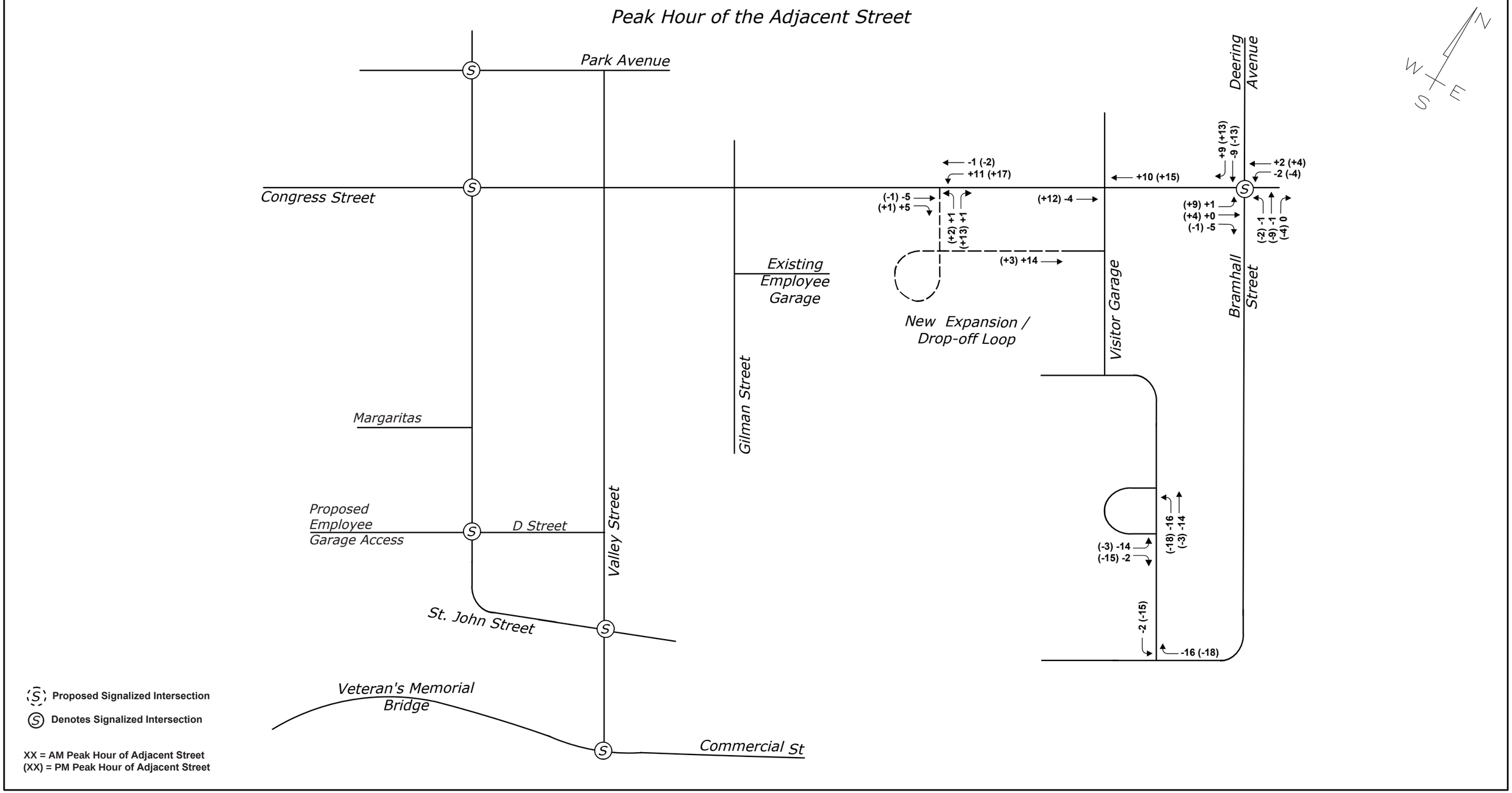
Phase 3 Drop Off Reassignment

Figure No. 8



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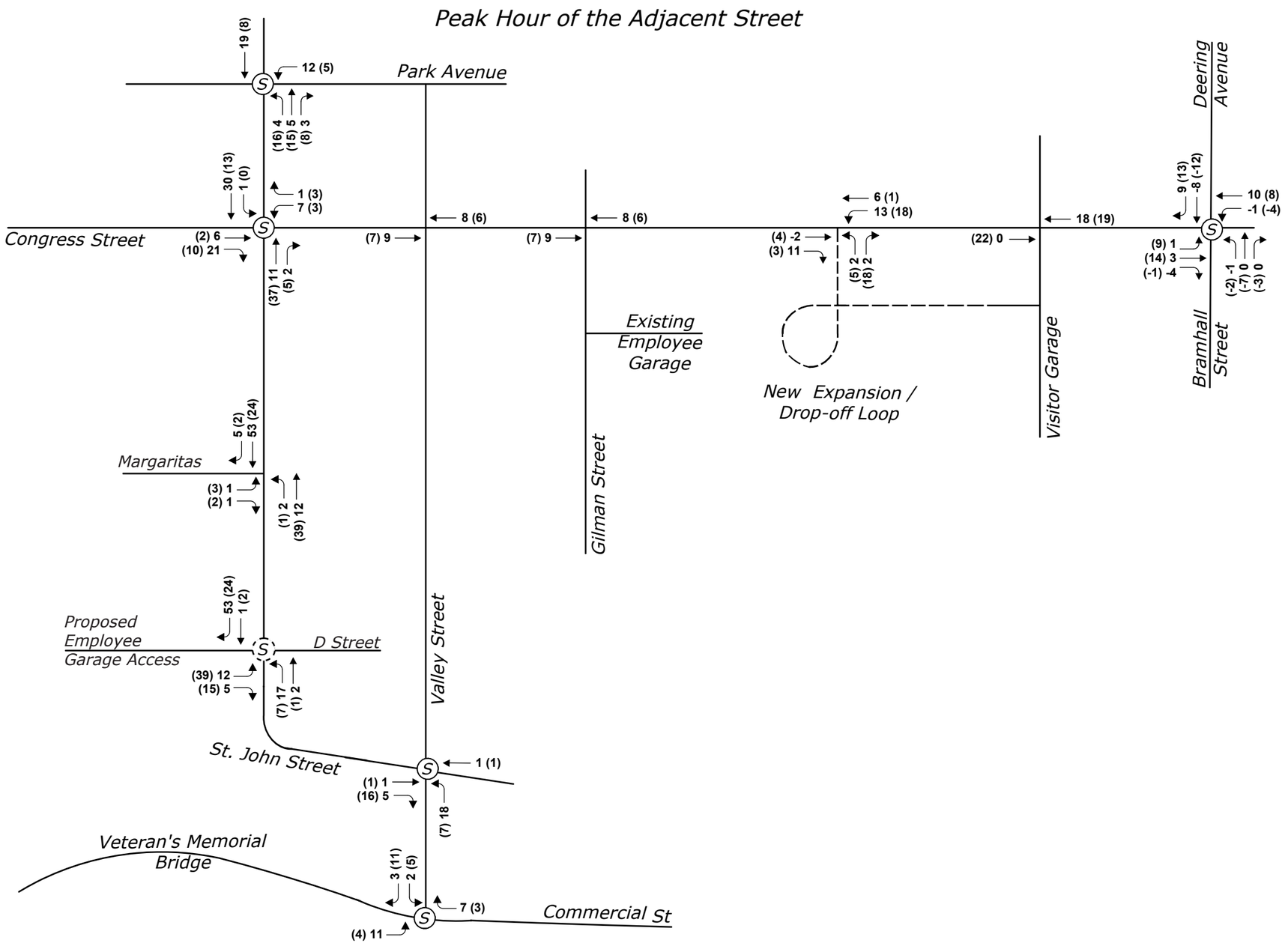

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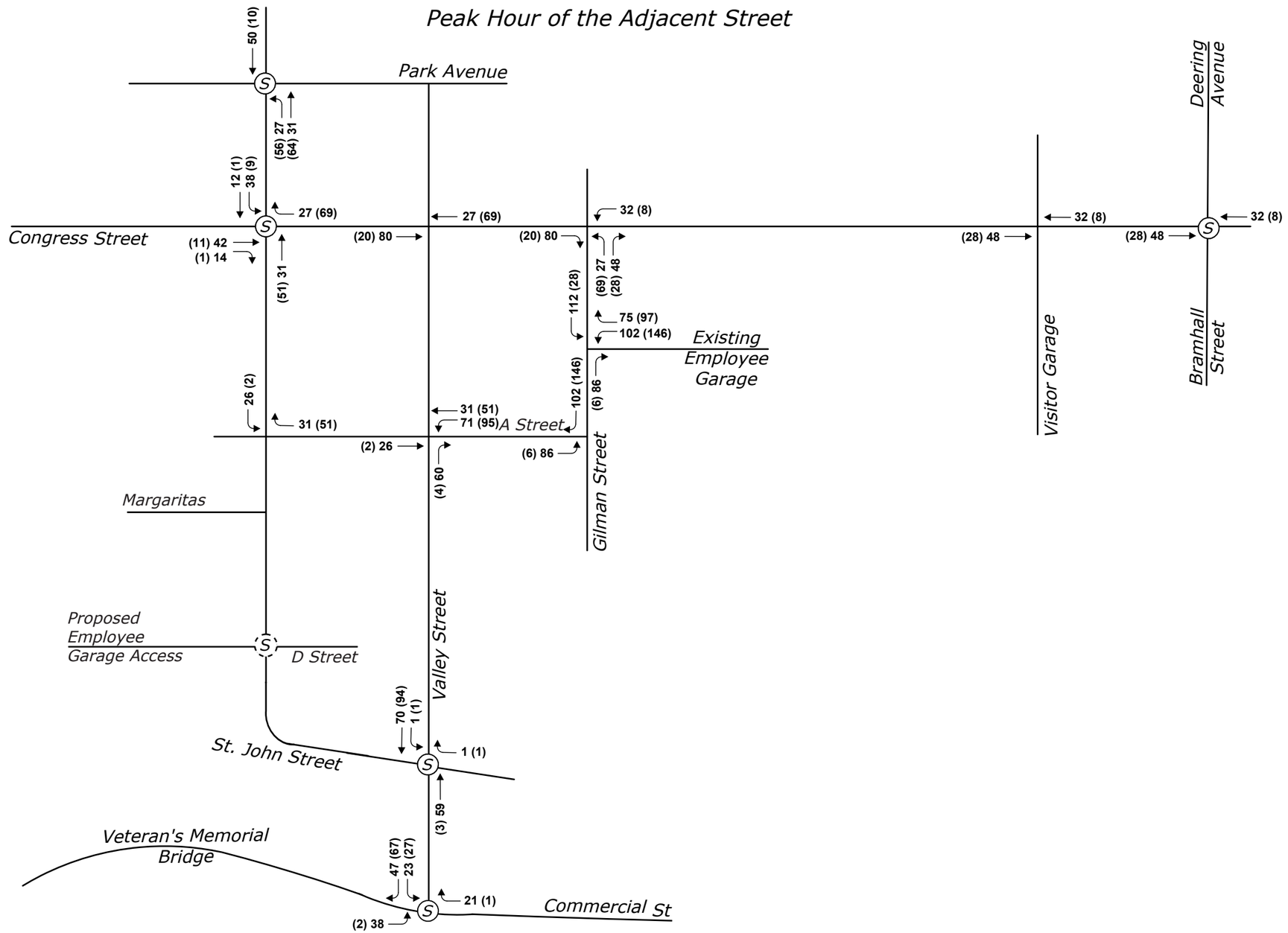
Existing Employee Garage Assignment

Figure No. 10



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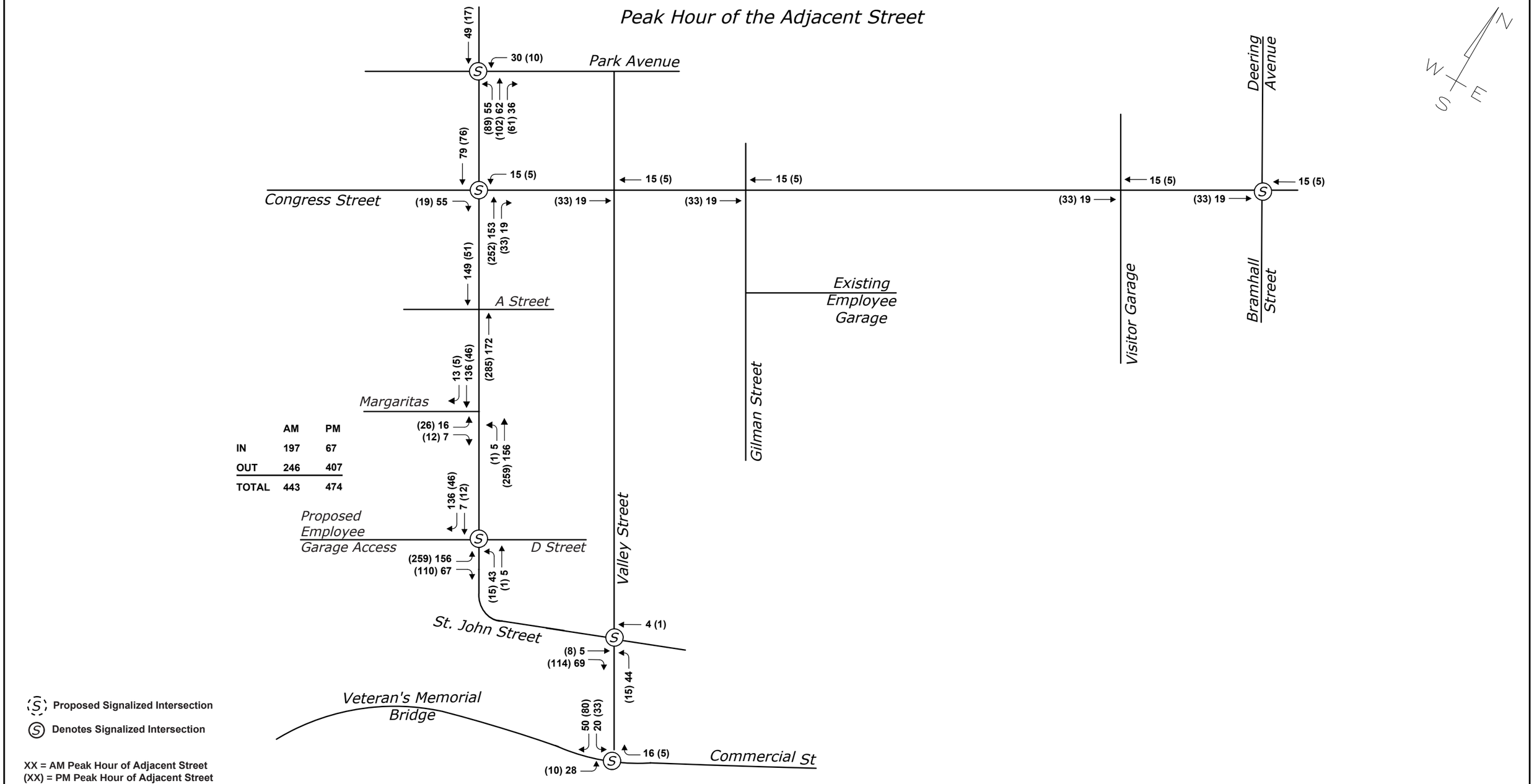
Proposed Garage Reassignment

Figure No. 11



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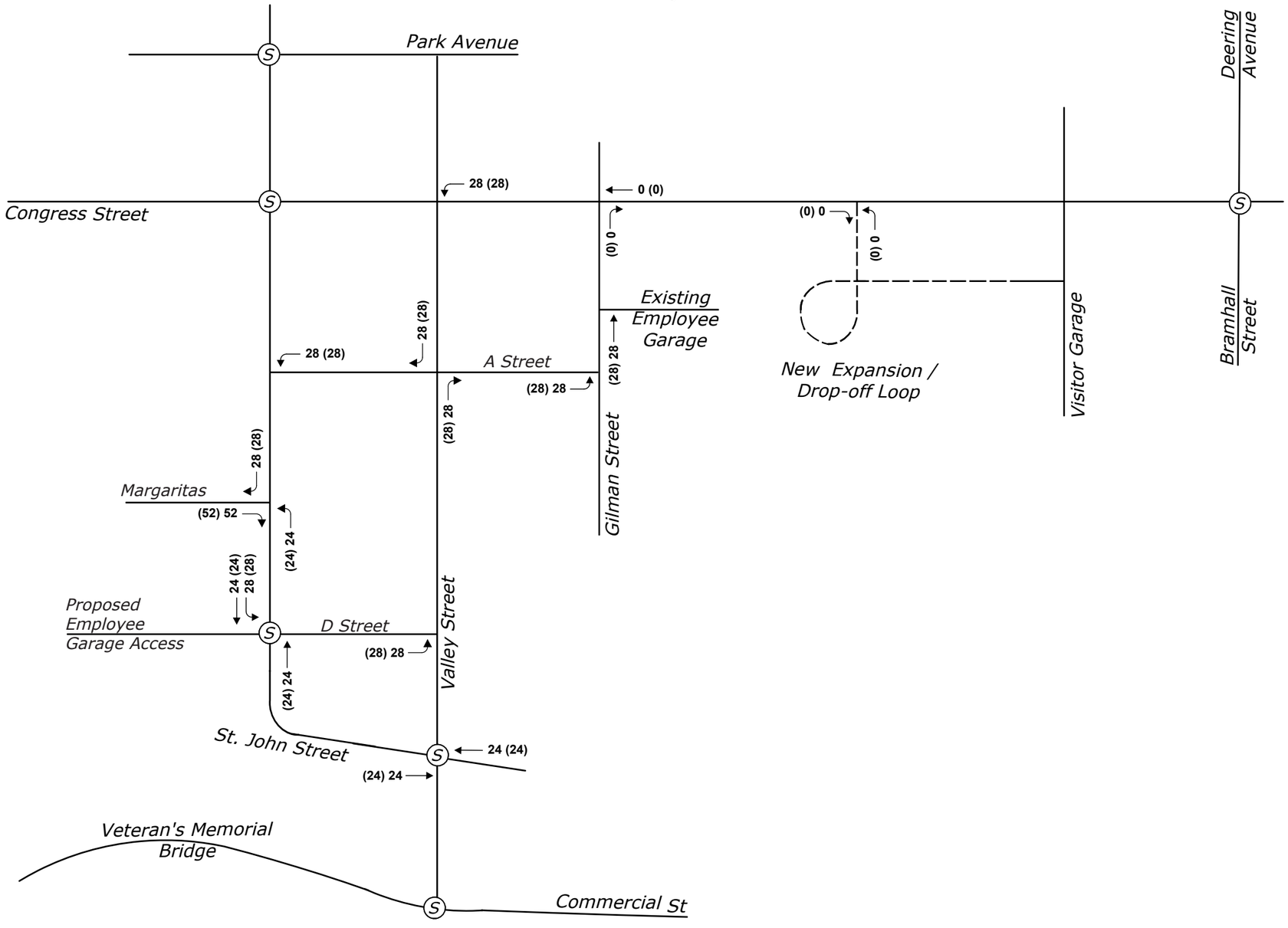
Shuttle Assignment

Figure No. 12

Peak Hour of the Adjacent Street



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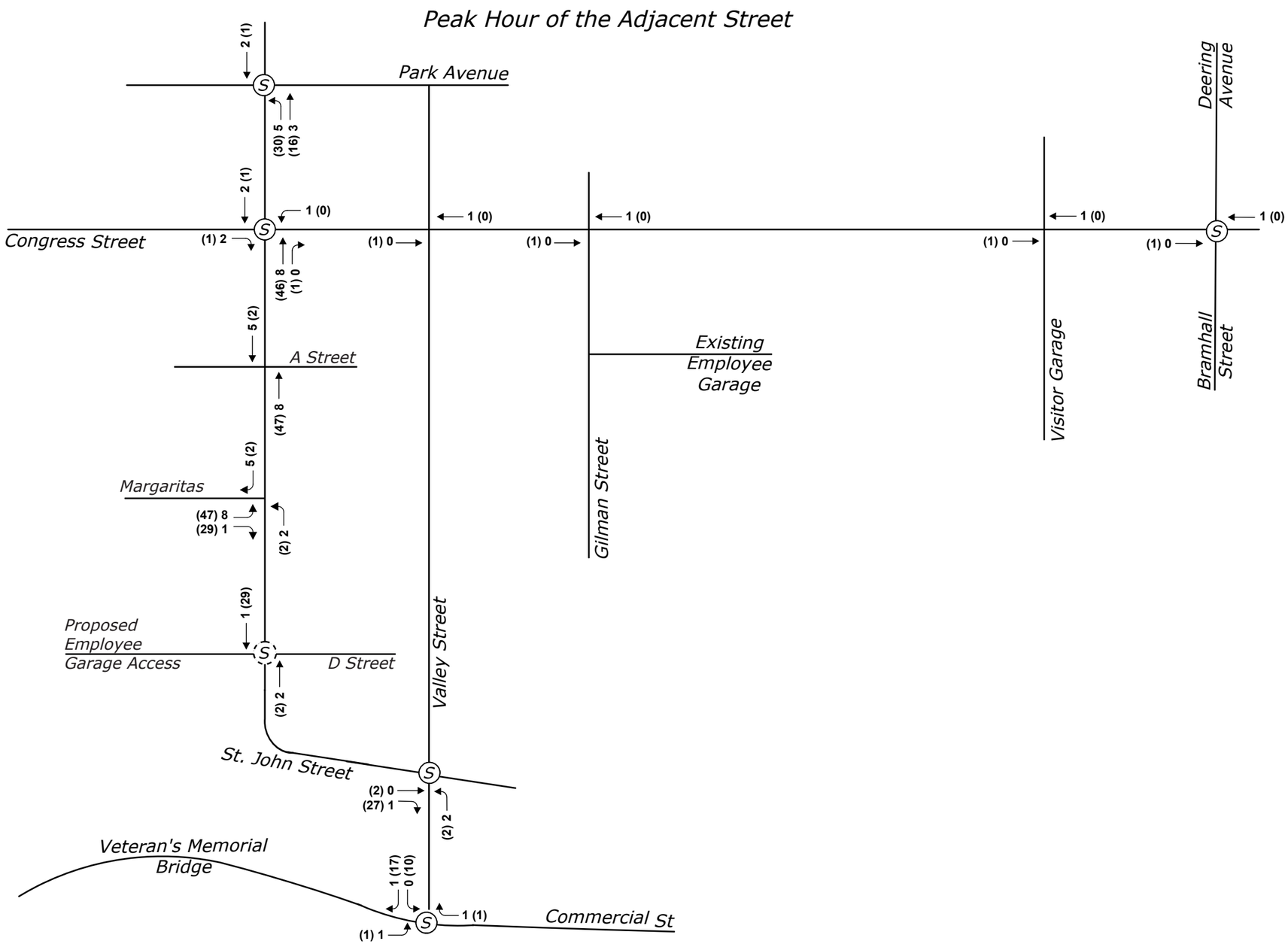
222 St. John Existing MMC Traffic

Figure No. 13



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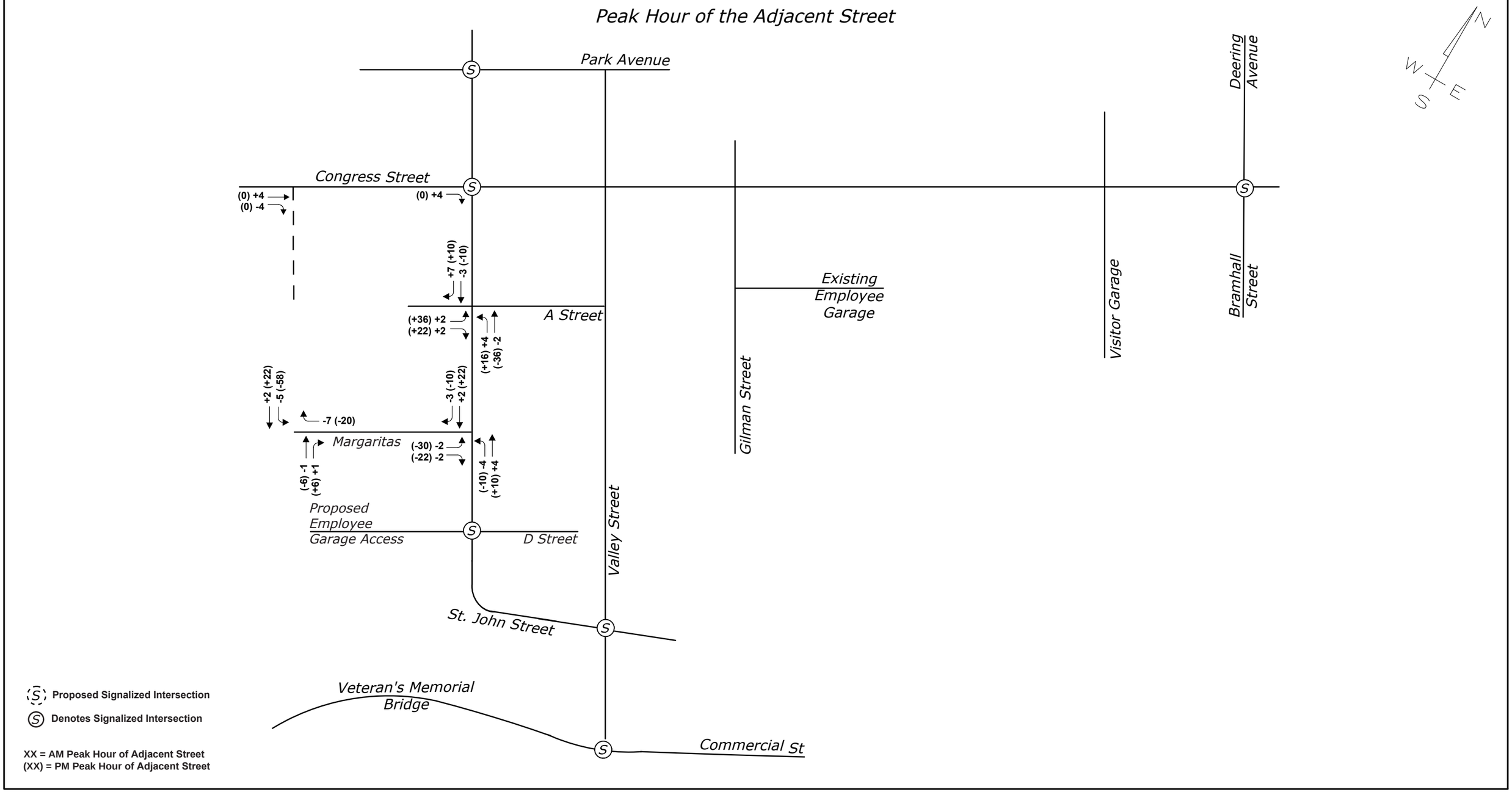
222 St. John Cut-Through (Non-MMC)

Figure No. 14



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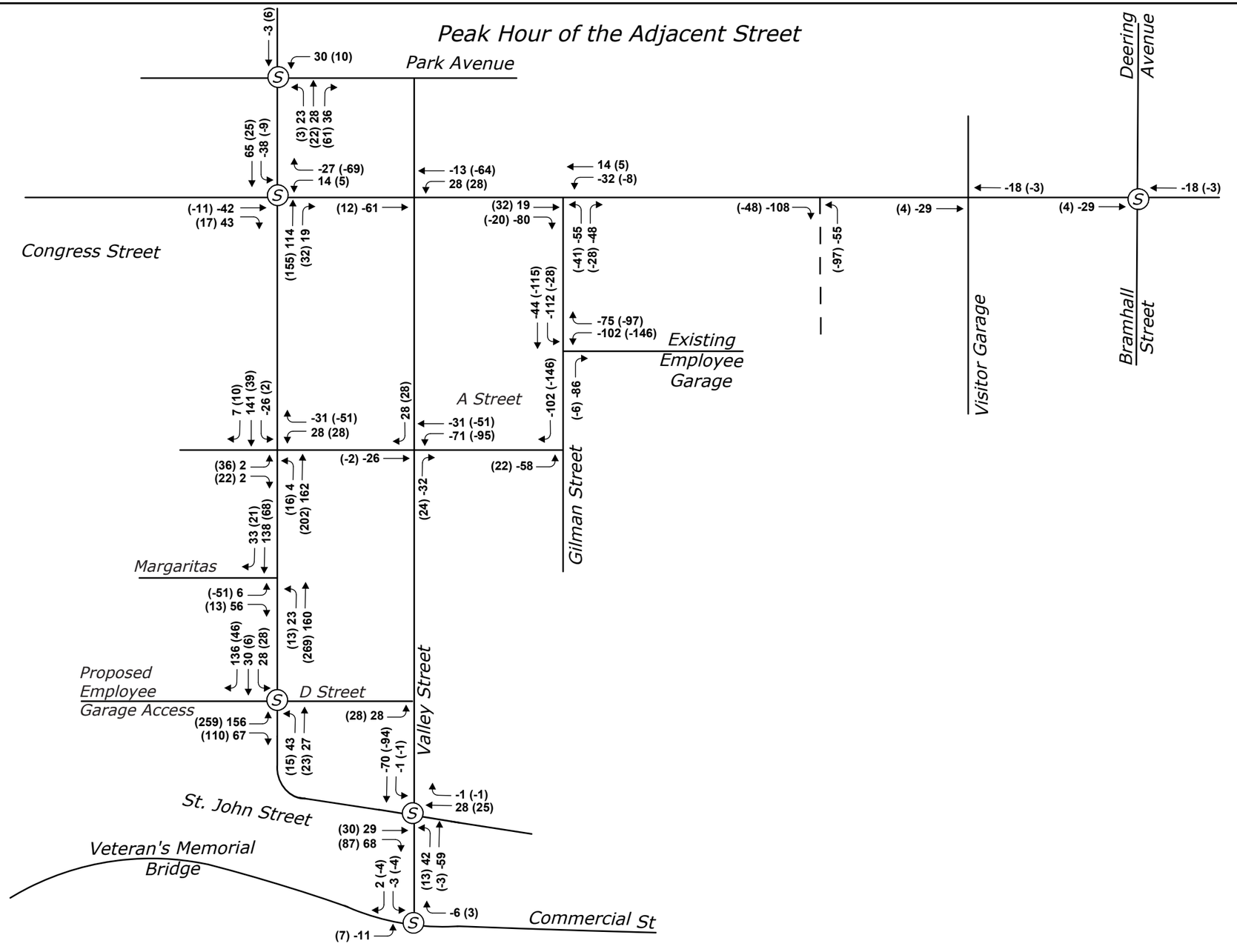
Net Impact Due to Proposed Employee Garage

Figure No. 15



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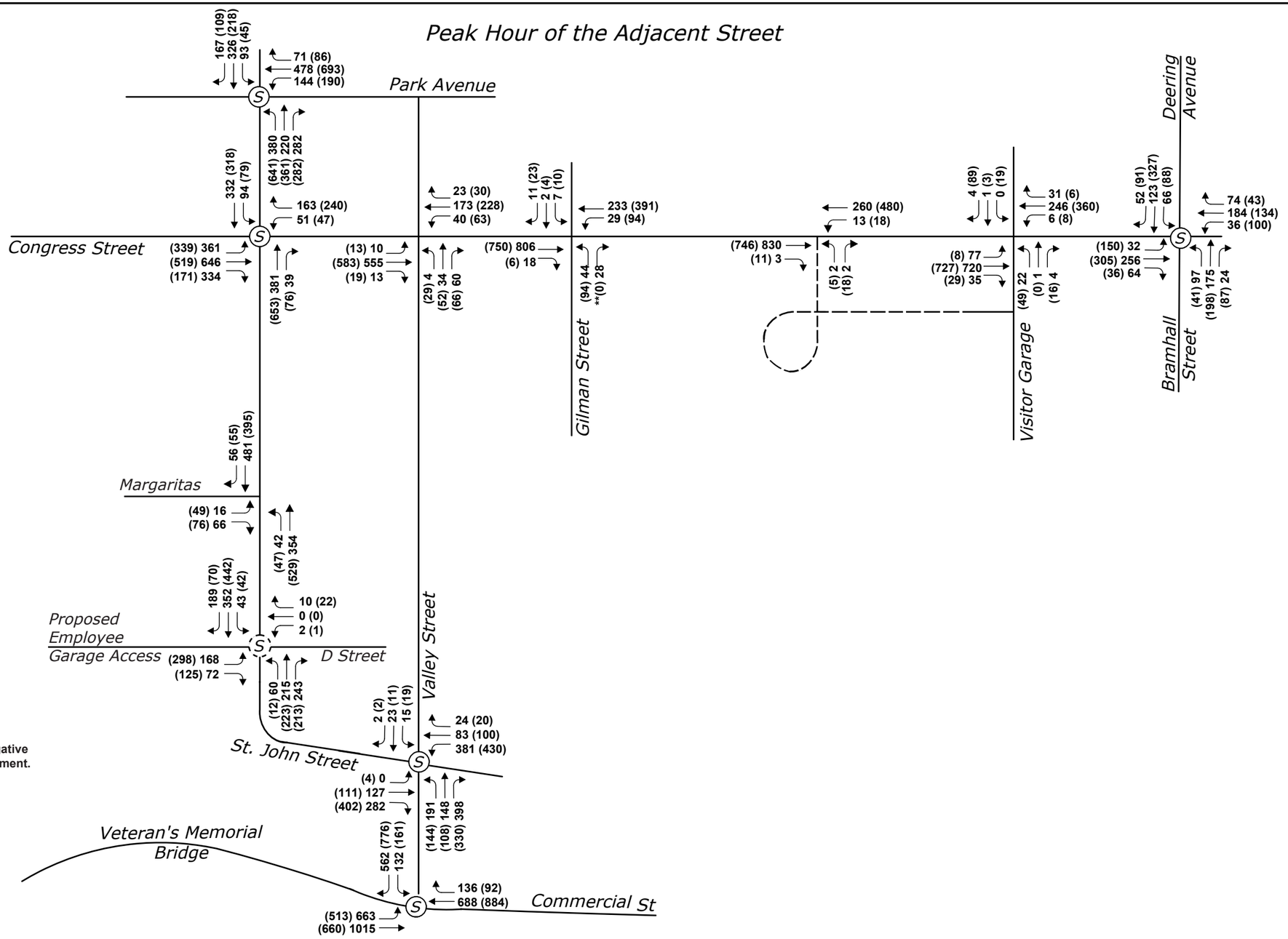

** Post development volumes forecast to be negative during the PM peak hour based on trip re-assignment.

* Through volumes based on volumes at adjacent intersections.

(S) Proposed Signalized Intersection

(S) Denotes Signalized Intersection

XX = AM Peak Hour of Adjacent Street
(XX) = PM Peak Hour of Adjacent Street

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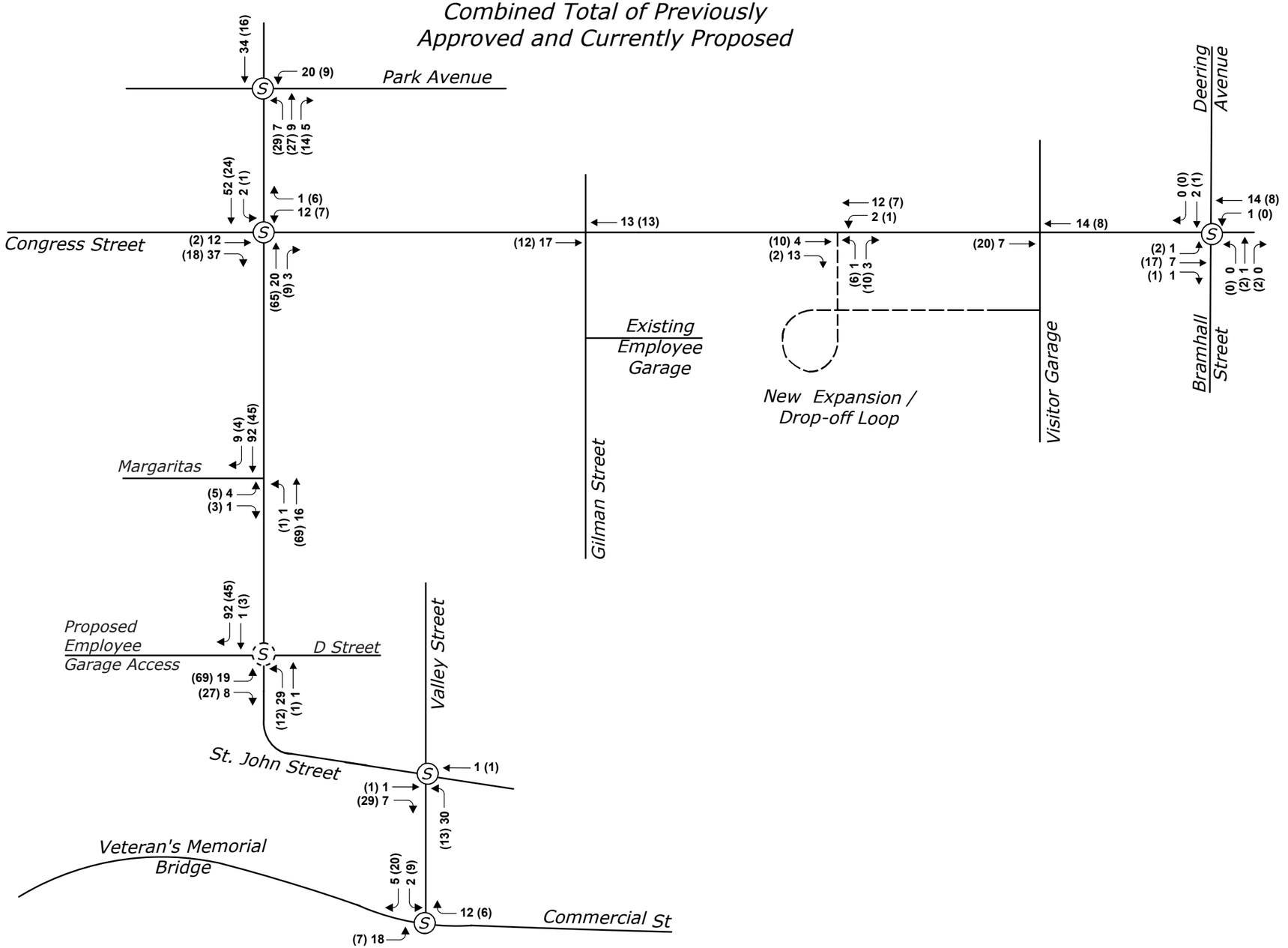
Study Area

Figure No. 17



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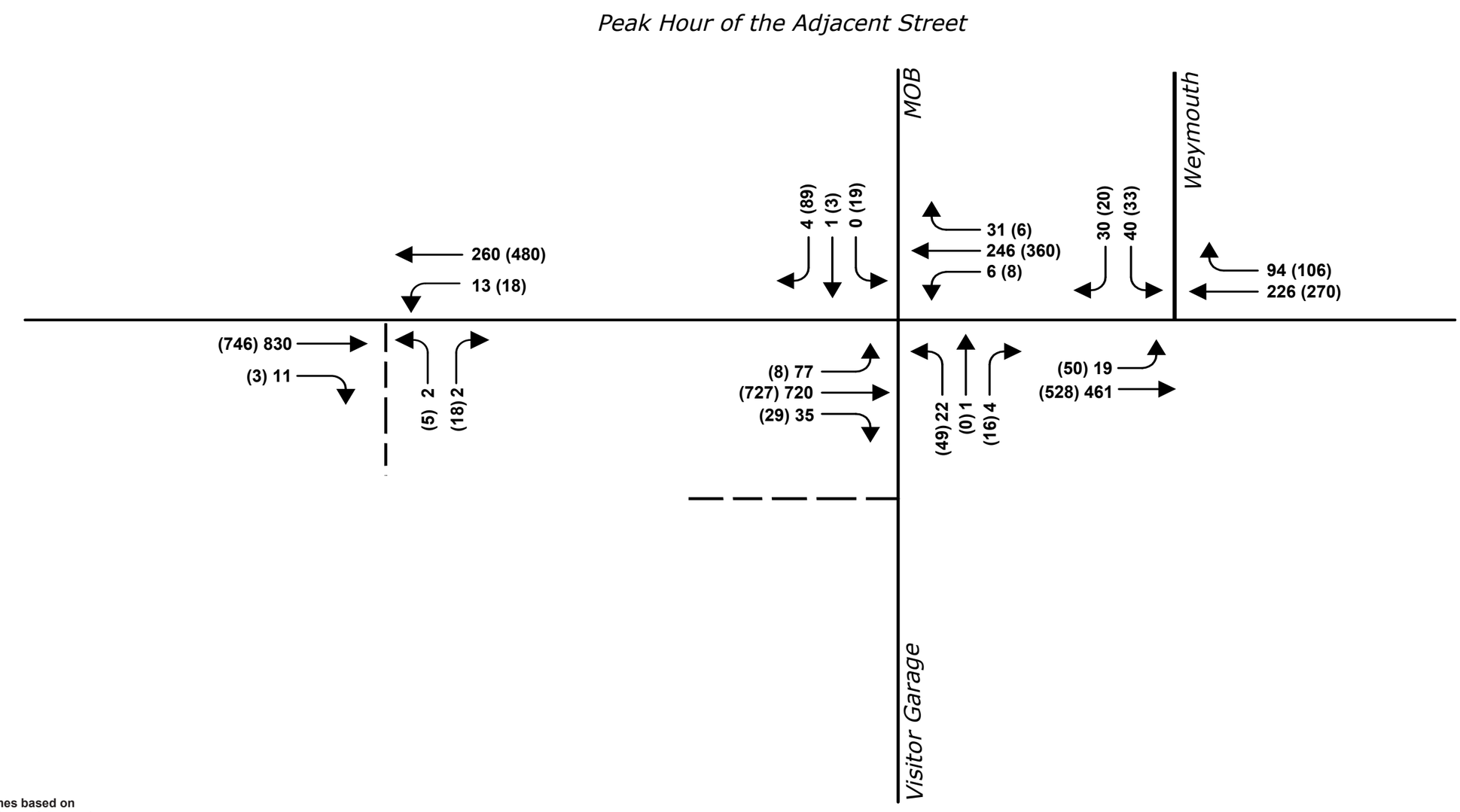
Peak Hour of the Adjacent Street



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Maine Medical Center
MaineHealth

PERKINS+WILL

JJ

MMC Congress Street - City Design Narrative

To: Al Green

From: Jeffrey Keilman

Date: September 14, 2018

Subject: **MMC Congress Street - City Design Narrative**

Attachments

The purpose of this memorandum is to document and provide design team process and responses to address the IOZ Design Review standards as required following up on conversations with City of Portland Planning Staff outlining design intent.

IDP Design Guidelines

Guideline No. 1
New buildings will be designed to contribute to the campus vision and organizational goals identified in the Master
FacilityPlan and the Transportation Plan, and best practice design
standards for healthcare.
Design Response
The design of the proposed Congress Street Patient Tower meets this guideline. The proposed building follows the design drivers outlined in MMC's Institutional Development Plan (Pgs. 100-102)

1. The building creates a new gateway to the hospital, highlighting a major axis in the City of Portland, along Congress Street and further expands upon the architectural character and vision of the MMC campus that was established by the Bean Expansion and East Tower. The Congress Street Patient Tower further defines the architectural character of the campus by articulating a design that adheres to best practice standards for healthcare as dictated by designing from the inside out in that the key plan and program requirements are expressed within the exterior massing. This massing relates to required scale for modern delivery of healthcare and further links to the architectural character and scale of the other building projects on the campus, including the East Tower addition and Bean Surgery expansion, both visible and reinforced in the layering of the buildings on campus.
2. The building will be an efficient and well-organized addition to campus. The Congress St. entrance, adjacent to the patient and visitor parking garage will be easy for patients and visitors to find. This entrance is glazed and highlighted by the multistory atrium that is visable from Congress Street and creates a destination for clarity of wayfinding.
3. The building design supports healing. The building is designed around the patient rooms and procedure rooms. Window heights, fenestration, and the façade articulation will all contribute to a better patient experience. The design aesthetics relate to the campus vision by epitomizing the top-quality, advanced healthcare delivered on campus. Attention to scale and proportions for the inhabitants drove design and massing decisions on the exterior. In

particular, decisions on where to include glazing, and more importantly, where solid wall is located was driven by the interior plan and program. A patient centric experience from the interior design was the key driver and critical in shaping the exterior expression of the architecture.

4. A sustainable and resilient campus is enhanced with the Congress St. Tower. Impervious surfaces are reduced with the use of green roofs, roof terraces & courtyards, and landscaped surfaces along Congress St.
5. The contextual landscape framework achieves a balance between the urban edge that the new building creates with Congress St. and providing landscaped amenities as appropriate. The landscape, in conjunction with the hardscape, create a layering of space from the public right-of-way to the new entry for the hospital. The landscape framework also mitigates the large grade changes and provides an urban plaza and pedestrian connections for the hospital previously lacking along Congress St. Decisions on landscape design and formal moves were considered not only from the context of the street experience, but also for patients who will be looking at these spaces from within the hospital with the understanding that a room with a view has clinically proven to improve patient outcomes

The stated MMC vision includes integrating inside and outside - achieved here through the internal circulation and window size and placement, as well as a "50 year palette" that selects materials based on cues from nature to create a timeless environment. This vision includes Sky, Sea, and Land as concepts for material/color selection. Although the design of the Congress Street Tower could be considered contemporary, the choice of materials, design details, and other elements relate to a sense of place, specifically, Maine.

Guideline No. 2

The overall composition and experience of the campus will be considered for cohesive identity from approaches along Congress Street and I-295.

Design Response

This guideline is met because the design of Congress Street Patient Care Tower was envisioned in conjunction with both the East Tower and Visitor Garage, in particular how long views and campus identity are reinforced, including both current and future phase goals. This is demonstrated in the provided renderings that link the buildings on the hill with those along Congress Street in approach and scale.

Guideline No. 3

Building entrances will be oriented toward, located adjacent to, accessible from, a sidewalk in a public right-of-way to create a pedestrian-oriented environment.

Design Response

This guideline is met as new entrances for vehicular drop-off, pedestrian access, and access from public transportation are created along Congress Street directly linked to the public right-of-way. The design of the landscape/hardscape along Congress Street further link the building to the public realm and assist in creating a pedestrian-oriented environment. The creation of a small plaza and an urban staircase

provide for a public space that mitigates the challenges created by grade at this location. Entrances were considered for their relation to the public, but also for their critical adjacencies within the facility. Ability for patients and visitors to quickly enter the building and access critical services through limited travel distances and intuitive wayfinding seamlessly link the exterior to the interior.

Guideline No. 4
Building designs will relate to and be compatible with the existing, or – in areas of change – planned character of residential and commercial neighbors. Design elements and characteristics to consider include:

- Building placement and relationship to the street
- Overall massing and scale
- Roof forms
- Proportion, directional expression, and composition of facades
- Rhythm of solids to voids
- Rhythm and proportion of openings
- Rhythm of entries and projections
- Relationship of materials, texture, and color

Design Response
This guideline is met because the design of Congress St. utilizes materials, scale, form, detail, to be compatible with adjacent MMC campus construction, while speaking to the required scale and aesthetics of modern healthcare. The design relates to both the East Tower and the recently completed Bean Addition. This is demonstrated through the rooflines, simplicity of details to adjacent construction, and materiality. Proportion, façade expression, and composition was developed to relate to the planned character for the Bramhall Campus, as it is an area of change. This is seen in the proportion of fenestration, expression and composition of facades with modern materials to relate to Surgery 2 expansion and proposed Congress Street building.

Guideline No. 5
Façade materials of buildings will be of high quality, and contribute to an attractive public realm.
Design Response
This guideline is met because the design utilizes high quality, high performance systems that provide attractive aesthetic design but also high performing environmental design adding aesthetically to the public realm. Choices in materials were selected deliberately to meet the rigors required by healthcare interior environments.

Façade materials are of high quality and more importantly appropriate performance from a thermal standpoint to align with the clinical programs within the building. Attention to detailing and current and future context were critical in the material selections. Additional long views have been developed that in conjunction with the campus aerial speak to the new vision and image for the MMC Bramhall Campus. Subsequently, constructability and programmatic drivers were real constraints in

selection of materials.

Guideline No. 6

The design process will consider long views of new buildings including roofs and associated structures to minimize visual impacts and provide visual interest. Rooftop appurtenances will be either screened from view or integrated into the building design, and will not be visible from adjacent streets, Western Promenade, or the Congress Street approach (helipad excluded).

Design Response

This guideline is met because the design of the Congress Street building demonstrated with perspectives indicating the long views and visual impacts achieved in unifying the campus. Rooftop screening is utilized in the limited locations where appurtenances would have potentially been visible from street and/or long views. Inclusion of green roofs, both visual and occupied, further enrich the roofscape.

Guideline No. 7

Vibrant, contributing and sustainable active ground floors will be provided to add activity and a sense of place to the priority node identified in the City's Comprehensive Plan.

Design Response

The Congress Street building provides this by aligning two entries along Congress St., providing activity and a sense of place along a key urban edge to the city. The inclusion of a major hospital entry along Congress St. that enables both vehicular and pedestrian connections enriches the streetscape but also provides identity to MMC in the place of a previously located parking garage. Linking this entry with a transparent concourse to the employee entry further activates the ground floor as activity will occur along this spine 24 hours a day, keeping eyes on the street.

Guideline No. 8

In areas where the occurrence of limited blank facades along public right-of-ways are unavoidable due to changes in topography or building use requirements, the following strategies will be used to mitigate visual impact:

- providing elements of visual interest along any black walls facing public streets, and,
- working with the City of Portland to ensure adequate lighting of public sidewalks to create a safe pedestrian experience.

Design Response

This guideline is met because Congress Street is activated with the addition of new entrances and activities along the Congress St. edge. In addition, MMC is working with the City of Portland regarding street and pedestrian level lighting along Congress St. The use of transparency and properly located glazing further strengthen the visual interest and depth of the facades. Photometric calculations have been provided indicating that proper light levels will be maintained. The location and rhythm of fenestration was determined by the patient focused planning and interior program drivers.

September 14, 2018
Re: **MMC Congress Street - City Design Narrative**

Guideline No. 9

Any parking structure within the IOZ will:

- screen views of cars from the public rights-of-way
- provide elements of architectural interest on upper floors to contribute positively to long views and gateway approaches
- for garage structures within 20' of the public right-of-way, meet street activation intent according to street type

Design Response

This guideline is not applicable to this submission because there is no proposed parking.

Building Relationship to Public Street

1. Urban Main Street (Congress Street)

MMC buildings abutting Congress St will be designed to:

- Provide urban-levels of density
- Create an urban street wall that provides a sense of enclosure to the public realm
- Have their primary orientation towards Congress Street
- Activate the public sidewalk with building entrances, lobbies, etc.
- To the extent possible, given programmatic needs, provide visual interest and ensure pedestrian safety with views into and out of the building along the public sidewalk
- To the extent possible, given programmatic needs, provide space for community oriented uses such as services or retail that can be shared between MMC users, neighbors, and the broader Portland community
- Support the existence of neighborhood amenities such as restaurants and other retail uses providing services to local residents and employees both during the day and evening hours.

In addition to the guidelines listed above, buildings that have frontage on Congress Street and that include parking components will activate portions of or place liner buildings along the ground floor facing Congress Street.

Design Response

The Congress Street building was conceived as the link for the MMC Bramhall Campus to the urban edge that is Congress Street. The buildings massing, while expressing the critical healthcare programs, also reinforces the street wall. Use of cantilevers and other changes within massing provide a sense of enclosure along the street edge while allowing for space to the benefit of the community such as urban plazas.

The new building is also oriented to Congress St. with the public entrance and lobby visible and active from the street. Also, since this is a hospital, its primary purpose programmatically is to provide community oriented services.

Crime Prevention Through Environmental Design (CPTED)

MMC will incorporate the following design strategies that have been demonstrated to deter crime:

- Providing a clean and aesthetically pleasing campus environment that is designed with vandal-resistant materials

- Providing clear and properly-sized signs in safe locations to ensure safe wayfinding
- Ensuring that paths from transit stops, bike storage areas, and parking areas to main pedestrian entrances are well-lit, with clear sight lines
- Designing street-level elevations to minimize potential hideouts
- To the extent possible, given clinical program demands, providing views in and out of building ground floors populated by users to serve as "eyes on the street"
- Generating foot traffic on public sidewalks with pedestrian entrances

Design Response

The new building is comprised of quality materials that are durable and resistant to abuse and vandalism. The public realm is properly lit, and designed to minimize potential areas for hideouts. Foot traffic, both on the sidewalk and within the concourse of the new facility will further activate the site and provide eyes on the street.

WRITTEN SUBMISSION 10 – ACCESS AND CIRCULATION
BRAMHALL ST. -22; MMC CONGRESS STREET BUILDING

THE INFORMATION REQUESTED IN THIS SECTION MAY BE FOUND WITHIN OUR RESPONSE TO SECTION 9 – TRANSPORTATION ANALYSIS – TRAFFIC IMPACT.

Vehicles entering the site at the patient drop-off / pick-up area will be directed right to travel around the loop. A median will be constructed at the site access to prevent drivers from directly accessing the visitor garage without going around the loop. As the vehicles complete their drop-off or pick-up, they will have the choice of going straight to exit onto Congress Street or turning right to enter the visitor garage. This design allows vehicle interconnection between the patient loop and visitor garage without recirculating onto Congress Street, which can further reduce congestion and increase safety. Vehicles wishing to park and not drop-off or pick-up can use the existing full movement access to the visitor garage onto Congress St..

There will be exterior signage and interior signage that supports the traffic flow described above. Exterior signs will differentiate the Congress St patient pick-up / drop-off from the existing patient and visitor garage entrance. Signs within the existing patient and visitor garage will direct exiting traffic and traffic intending to pick-up a patient. Signs within the circle drive will direct traffic intending to exit the site and traffic intending to enter the patient and visitor parking garage. In addition to signs supporting the traffic flow, traffic exiting the patient and visitor garage will have a stop sign to support safe pedestrian access to the building's entrance.

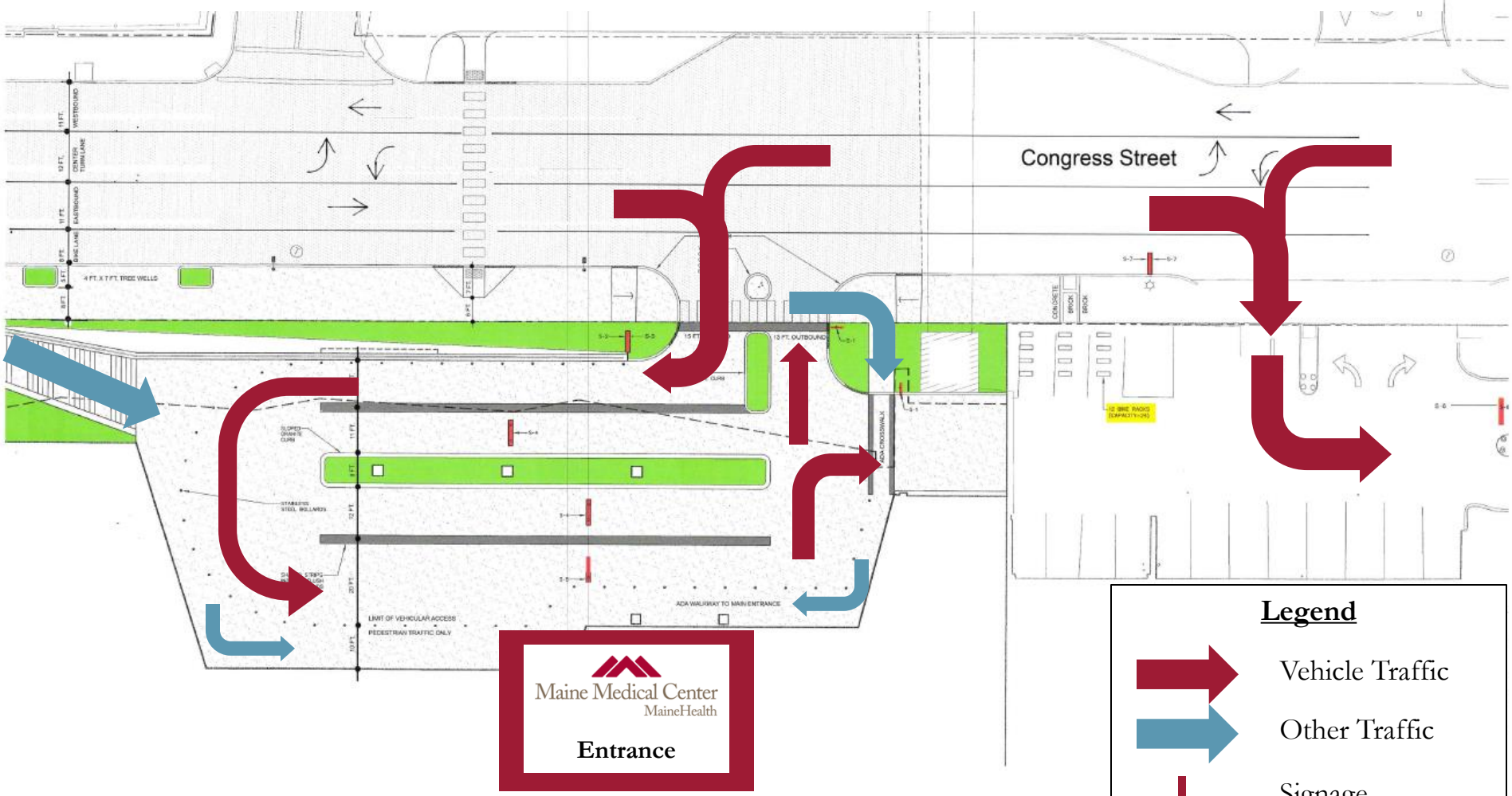
There is enough length within the entrance loop for approximately 11 vehicles to queue on-site without backing onto Congress Street. Traffic engineers observed the exiting entrance on Bramhall St to better understand the frequency and volume of queueing at a MMC entrance. Traffic engineers observed a maximum of 9 queued vehicles. The volume of patient pick-ups and drop-offs will be split between the existing entrance and the proposed new entrance in the future.

MMC intends to support the operations of the Congress St. entrance with valet service. Valet parking will improve the flow of the circular drive. In addition, valet attendants will assist individuals who do not wish to take advantage of the service by providing directions when needed.

At the October 23, 2018 Planning Board workshop, a planning board member commented that snow melters would be an excellent addition to the Congress St. entrance. MMC will be adding snow melters to this entrance.

MMC will continue to support the patient arrival experience by communicating with patients and their families in advance of scheduled appointments. These communications include details about the correct hospital entrance and parking location.

Patient or Visitor Arrival



Act with kindness and compassion.

Be an active listener.

Be a role model.

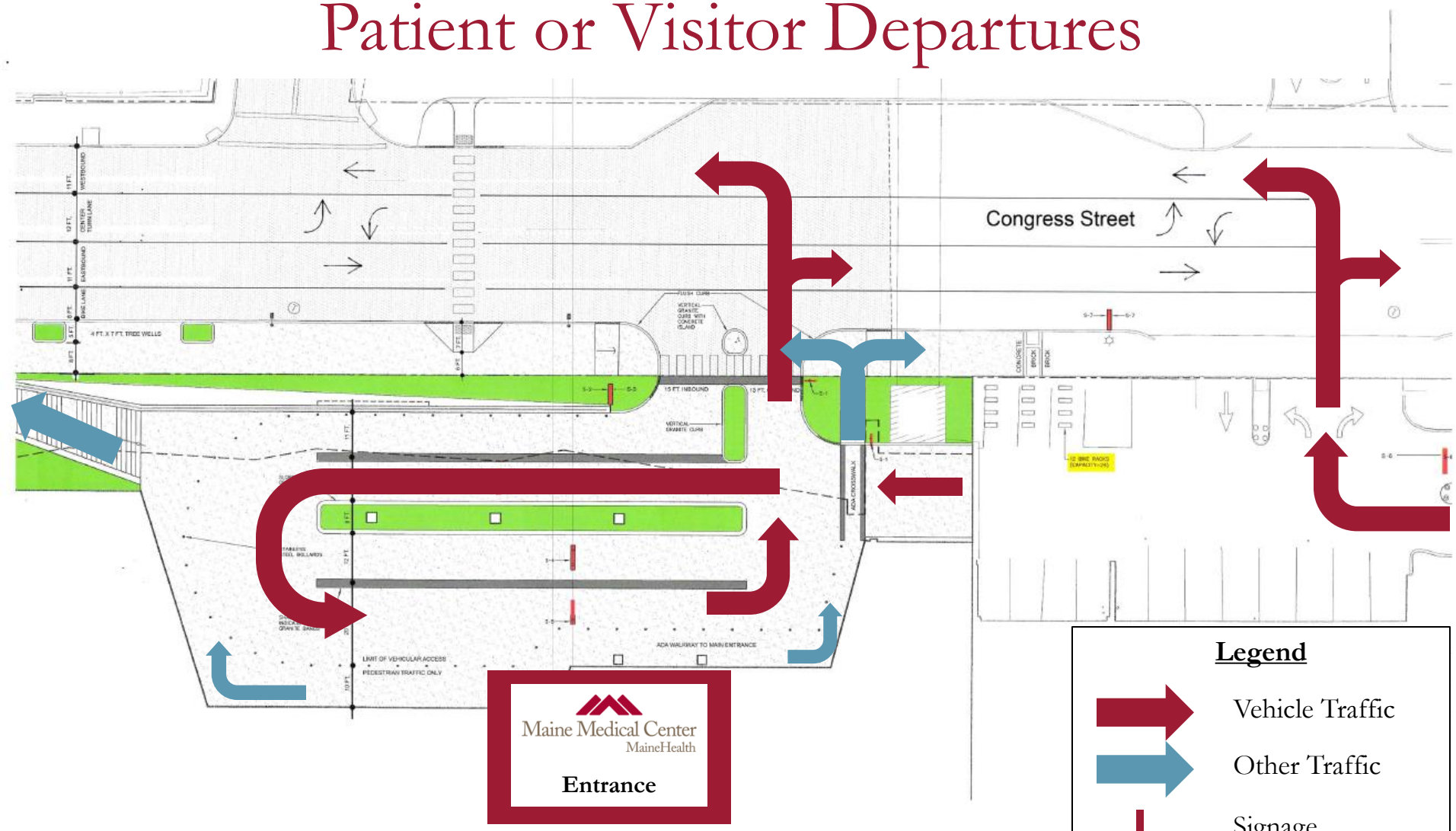
Set high standards.

Take responsibility.

Embrace change.

Maine Medical Center
MaineHealth

Patient or Visitor Departures



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Maine Medical Center
MaineHealth

KK

MAINE MEDICAL CENTER

Congress Street Building

New Clinical Tower

Construction Management Plan

September 25, 2018

[Amended: November 2, 2018]

Prepared for: Portland Department of Planning & Urban Development Department

Project Proponent: Colliers International

Construction Manager: Turner Construction

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MAINE MEDICAL CENTER

New Clinical Tower
Construction Management

Plan 09.25.18

Purpose Statement

The purpose of this document is to provide the details of the third phase of construction for MMC's Master Facility Plan - Phase IIB. This document outlines Turner Construction's plan for controlling impacts from noise, vibrations, ground movement, truck traffic, and other construction related factors to the surrounding neighborhoods and buildings.

Maintaining normal campus operations and public safety are high priorities during the construction phase. This plan will be presented to the appropriate City and Neighborhood representatives. The City of Portland Planning Board will approve the final plan. It has been the goal of these programs to define the construction plan before construction begins. Turner's experience on projects with similar logistic constraints has proven that pre-planning and constant communication are necessary for a smooth efficiently run, incident free project.

Turner Construction and its subcontractors shall schedule and conduct operations in a manner that will limit the disturbance to the public in areas adjacent to the work and to occupants of buildings in the vicinity.

1.0 CONSTRUCTION MANAGEMENT PLAN

This Construction Management Plan (CMP), submitted to the Portland Department of Planning & Urban Development for approval by the City of Portland Planning Board prior to the start of construction, includes specific mitigation measures and staging plans to minimize impacts to surrounding residences and businesses. The Construction Manager and its trade contractors will be bound by the CMP.

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Project Superintendent: Chris Rodenhizer
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Project Director: Gregg Scholler
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2.0 CONSTRUCTION SCHEDULE & WORK HOURS

Construction work hours will be in accordance with Section 17-18 and Section 25-129.

2.1 Work Hours

- The construction period for the project is expected to be approximately 36 months in duration.
- It is anticipated that the project construction is estimated to start on or about Winter 2019 (December) and last through Fall 2022 (commissioning activities will occur into early 2023).
- Work hours will be 7AM to 7 PM Monday thru Friday.
- Workers will gather at their workplace from 6 AM to 7AM.
- Saturday work will be required on a periodic basis with hours from 7 AM to 6 PM.

2.2 Construction Timeline

2.2.1 Winter 2019 to Fall 2022 (commissioning activities will occur through early 2023)

Congress Street Staff Garage- dismantle and remove

Structurally dismantle existing Staff parking garage. This project is expected to start in late Fall 2019 (December and complete in Spring 2020 (6 Months)

Congress Street Clinical Tower

A new 265,000 SF building. This project is expected to start in Spring 2020 and complete in Fall 2022. (30 Months)

2.3 Construction Updates Reporting

The following shall be reported to Maine Medical Center as a part of the CMP.

- Monthly "look ahead" schedules and narrative for upcoming construction activities.
- Schedule of over-size deliveries to the site that will impact roadways
- Schedule of deliveries that will be outside the City of Portland's allowable work hours.
- Proposed schedule for utility connection or work in public roadways or sidewalks as a part of Turner Construction's work.
- Proposed off-hours or Saturday work.
- Construction activities that may impact the neighborhood in an adverse way, including noise, vibration, dust, on-street parking or work outside construction limits or times. Also, proposed options to mitigate these impacts.
- An estimate of the number of vehicles that will require off-site parking.

2.4 Construction Logistics

The proposed Logistics Plans included in the CMP are designed to isolate the construction while providing safe access for pedestrians, hospital operations, and automobiles during normal day-to-day activities and emergencies. Interaction with the public will occur mainly along Congress Street and Gilman Street. The logistics plan define the timeline of construction activities and the location of cranes, gates, access for each Phase.

Each site will be secured by an 8-foot high fence with privacy screening in accordance with the Logistics Plan.

Pedestrian Routes of travel are shown on Logistics Slides page number 2 - 5

2.5 Perimeter Protection / Public Safety

- Turner Construction will work to ensure the sidewalk protection minimizes impact to pedestrian and vehicular flow.

- The specific configuration of sidewalk protection and pedestrian access around the site will vary depending on the phase of the work being performed.
- In general, secured fencing will be used to isolate construction areas from pedestrian traffic.
- Flagmen or Police Details will be provided at all active gates when there are deliveries.
- Construction procedures will be designed to meet all OSHA safety standards for specific site construction activities.
- Subcontractors will implement and manage their own Health and Safety Program for the project.
- All Subcontractors are required to wear appropriate personal protective equipment.
- Snow removal and ice treatment will be provided on the surrounding area within the construction fence.
- Sidewalks will be cleaned of trash and debris as needed.
- Street lights will be taken down on Congress Street and stored offsite. The street lights will be reinstalled as part of the project completion.
- Concrete washout will be in concrete washout station, collected and placed in a dumpster. Concrete washout area to be located within the site fence.
- Turner Construction will provide sufficient temporary site lighting to ensure the safety of all pedestrians accessing the sidewalks around the site, including lighting at all covered pedestrian walkways, until permanent street lights are installed Light levels will be tested prior to temporary removal of site lighting.

2.6 Worker Parking & Traffic Impacts

- Turner Construction and its subcontractors shall encourage the use of public transportation by their workers.
- Jobsite personnel will be required to park at an offsite parking area to be determined and will be shuttled to the construction site. See Logistics Slide page number 6 and 7
  - Jobsite personnel will be required to park at MMC's Scarborough Campus
  - Jobsite personnel will be shuttled to the construction site
  - Subcontractors who violate this requirement will be fined $500 per offense
- Worker parking shall not be allowed on site except for company vehicles required to perform the work.
- Turner will qualify subcontractors' with a legitimate reason to park onsite and manage that parking within the construction fence and not impact parking in the surrounding area.
- No personal vehicles will be allowed to park at the project construction site or in the adjacent residential streets.
- The following language will be included in the contracts with all subcontractors
  - *"Parking: There shall be absolutely no parking on the project site, in the Hospital Parking Garages and / or Hospital Surface Parking lots, and on street parking adjacent to the Hospital. This is including but not limited to employee vehicles, company vehicles, delivery trucks, trucks containing equipment such as welders, etc. Turner to provide remote parking location, and transportation to and from the jobsite. Any workers found in violation of this policy will be subject to permanent removal from the project and the subcontractor shall be assessed a $500 fine per incident."*

The number of workers required during the construction will vary by Construction Phase.

Construction Phase - November 2019 to November 2022

- Fall/Winter 2019- Spring 2020 – average workers – 60
- Spring 2020- Spring 2021 – average workers – 100-125
- Spring 2021- Spring 2022 - average workers – 200-275
- Spring 2022 – Fall/Winter 2022 – 225 - 300

2.7 Truck Routes and Volumes – **See Logistics Plans page number 6 & 7 and additional truck route information attached at the end of the Logistics Plans.**

All street opening and occupancy in the public right of way will be in accordance with Chapter 25 of the City of Portland Land Use Code

- Truck traffic will vary throughout the construction period, depending on the activity.
- An offsite marshalling area will be utilized for large deliveries such as structural steel and exterior wall.
- All trucks will be brought to the construction areas at MMC by experienced dedicated drivers from the marshalling lot.
- Radio and cell phones will be utilized to coordinate all trucking.
- Trucks routes must be submitted and approved by the City of Portland and the Owner before the start of construction.
- Truck idling will be held to a minimum on-site, to minimize the impact to adjacent properties.
- Turner Construction and its subcontractors shall ensure that haul routes, debris and soil removal, and staging areas are conducted in a manner that minimizes the impacts to the abutting communities.
- Wheel wash stations will be installed and maintained by Turner and its subcontractors as needed and maintained at construction site exit areas.
- Street sweeping / vacuuming of all impacted City streets and sidewalks shall be performed by Turner Construction and its subcontractors on an as-needed basis.
- Streets, sidewalks, bicycle ways or other means of travel may not be obstructed or closed without permission from the Owner and other authorities having jurisdiction. The Owner shall be notified one week in advance of any such obstructions or closures.

3.1 CONSTRUCTION

3.2 METHODOLOGY- Staff Garage Structural Removal- See Logistics slides page number 9 – 11

Turner and the Contractor will develop the sequencing and methodology of the Staff Garage removal. All sequencing will be approved by a Structural Engineer of Record. At mobilization of the garage removal, debris netting will be installed from the garage roof down to grade, with wire rope. This netting will be on all exposed faces of the garage elevations. All areas will be cordoned off and all utilities and transformers will be protected, or shut off. A level platform will be created at the west and north elevations.

A physical separation of the existing pedestrian bridge at the northeast corner of the garage will be created.

Upon separation of the garage, high reach excavators (Volvo EC 700 or equivalent) equipped with rotating concrete processors will be mobilized. Excavators will be mobilized to assist the high reach equipment in concrete processing and debris load out.
Brokks equipment will also potentially be utilized of the top two levels of the structure in areas where the high reach equipment cannot gain access.
Concrete materials will be placed in the existing building footprint to act as a bench surface for high reach progression and earth retention equipment.

The garage removal will commence on the west side of the garage. The high reach processors will move east working from the north to the south. Each long bay of the garage will be removed working to the east. The removal will start at the top of the garage, working downward, structural column bay. The concrete will be processed in place by the rotating concrete processors and reinforcement bars will be cut during the course of garage removal. The outer concrete on the north and south side of the garage will be pulled into the building footprint. On the south side each parking level will be cut free of the south garage retaining wall. This will keep the retaining wall in position as it will be reinforced with structural tiebacks.

Once the concrete has been processed in place by the high reach excavators, additional equipment will be used for the haul out of debris. Concrete materials will be placed at strategic elevations to create a work bench for equipment to work from.
As the demolition progresses east near the Stair Tower and Visitor garage, special care will be taken to remove the column bay, and hydraulic crane equipment with steel debris shields will act as protection from falling debris.

As the garage is razed, excess concrete materials will be shipped from the site via trucks, and disposed at a legal Maine disposal facility.
All debris will be sorted onsite and separated in the various waste streams.
During all concrete removals a constant water mist will be used to prevent the spread of dust from the site.

3.11 TRUCK TRAFFIC FOR STAFF GARAGE STRUCTURAL DEBRIS

- All truck traffic will be directed to enter the site in accordance with truck route plans approved by the City of Portland and included in the Logistics plans.
- Materials will be removed from the site by loading triaxles and roll off containers. Turner will closely coordinate the load out operation, and the staging of trucks.
- All subcontractors and vendors will be provided with pamphlets indicating the appropriate truck routes to access the site.
- Trucks will be brought within the fence line. The hauling of these trucks will be at designated loadout periods near the end of the working day. (From 3 PM to 7 PM)

- **Average Trucks per day for Congress Street patient tower construction project:**

PROCESSED CONCRETE DEBRIS REMOVAL
TRUCKS LOADING IN AFTERNOONS
AVERAGE TRUCKS PER DAY

2020	WEEK 1					WEEK 2					WEEK 3					WEEK 4				
	M	T	W	R	F	M	T	W	R	F	M	T	W	R	F	M	T	W	R	F
February	10	10	10	10	10	10	10	10	10	10	16	16	16	16	16	16	16	16	16	16
March	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
April	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
May	14	14	14	14	14	10	10	10	10	10	0	0	0	0	0	0	0	0	0	0

3.2 Construction – New Clinical Tower– (Refer to Logistics Slides page number 12 to 18)

All street opening and occupancy in the public right of way will be in accordance with Chapter 25 of the City of Portland Land Use Code

- All truck traffic will be directed to enter the site utilizing one gate on Congress Street and two gates on Gilman Street.
- During the mass cut excavation trucks will be removing earthwork material and concrete foundations to create the basement.

MASS EXCAVATION & FOUNDATION REMOVAL
TRUCKS LOADING ALL DAY - 2 to 3 TRUCKS/HOUR
AVERAGE TRUCKS PER DAY

2020	WEEK 1					WEEK 2					WEEK 3					WEEK 4				
	M	T	W	R	F	M	T	W	R	F	M	T	W	R	F	M	T	W	R	F
June	8	8	8	8	8	12	12	12	12	12	16	16	16	16	16	16	16	16	16	16
July	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
August	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
September	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	18	18	18	18	18

- A tower crane will be built within the site fence. During the erection and dismantling of the Tower crane police details and minor traffic interruption will be required. The foundation of the Tower crane will be a permanent structure. The tower crane foundation will remain in the ground, and will be utilized in future expansions by Maine Medical Center.
- All detours and paths of travel shown on the Site Logistics Plans will be followed.
- All road signage identified on the Maintenance of Traffic Plans will be installed and maintained by Turner during the Congress Street shutdown and detour.
- One lane of Congress Street will be closed during the construction timeframe. Congress Street will remain open for two way traffic. One lane of Gilman Street will be closed for the construction timeframe. Gilman Street will remain open for two way traffic.
- All subcontractors and vendors will be provided with instructions prior to their project start indicating the appropriate truck routes to access the site.

4.0 Dust Control, Noise, Air Monitoring, Vibration Monitoring

4.1 Dust Control

Control of dust is of paramount importance for this project, for Maine Medical Center, and for the city of Portland. There will be substantial dust control solutions on the site prior to the start of work. To reduce emission of dust and minimize impacts, physical barriers will be built to control spread of airborne dust, water – based dust suppression systems will be installed, specific storm water collection and filtering will be in place. It is a goal to have no visible emissions outside of the work limits.

4.11 Garage Removal Dust Control.

- Wetting agents will be used regularly to control and suppress dust that may come from the construction materials.
- Monsoon misting machines continually wetting down the perimeter of the work area
- Fire hoses spraying water above the work area, knocking down the dust.

- Water will be collected at the lowest part of the garage proper on the Gilman Street side of the garage. The water will be processed thru a Frac tank to remove sediment and concrete /stone pieces. The water will be recirculated to reuse for dust control.
- Tractor trailers, triaxles, and roll off containers will be used to remove processed concrete, ferrous, and nonferrous metals. All trucking will be fully covered with tarps during loadout.
- Trucks will enter and exit off of Gilman Street and Congress Street. Traffic flagmen will be positioned during all trucking operations to ensure safety and mitigate disruption and control traffic.
- Equipment will be fueled away from storm drains.
- Spill kits will be available to address any environmental issues. A hazardous materials response plan will be setup and approved. In the unlikely event of a spill, local authorities will be notified and an appropriate hazardous materials firm will provide the cleanup.
- Street and sidewalks will be cleaned to minimize dust accumulations as needed.

4.2 Noise

- The project will require the use of equipment that can be heard from off-site locations. This project will strive to mitigate construction noise impacts, to the extent possible.
- Increased community sound levels are an unavoidable consequence of construction activities.
- Construction will occur during the daytime hours as defined by the City of Portland Code of Ordinances (7:00 AM to 7:00 PM Monday through Friday).
- In some instances, a second shift, off hour, holiday and weekends may be required.
- When these events arise, all required permits will be obtained and notification will be posted in accordance with section 2.3
- Work shall be performed so as to prevent nuisance noise conditions that are preventable (e.g., unmaintained equipment, brake squeal, etc.).
- Should the noise level exceed the City of Portland noise standards, or a neighborhood or community complaint is made, the Contractor foreman will:
  - Notify the operator to cease the current method used to generate the noise, and look for another method or area to perform the task to see if it corrects the noise level
  - If still not within acceptable noise levels, a new dismantling plan or piece of equipment will be used.
- Turner Construction and all subcontractors shall use all reasonable efforts to implement noise reduction methods listed below to minimize construction noise emission levels.

- **Use of**:
  - Tie to local power grid to reduce the use of on-site generators.
  - Noise-deadening / isolating surrounds around exceptionally noisy work equipment or operations
  - The maintenance of the access roadways to minimize the “bouncing” of construction vehicles within the construction site.
  - Enforcing the site logistics plan, so as to maximize to every extent possible the forward movement of construction vehicles. This will, in turn, minimize the sound of back-up alarms.

Attaching:

- Intake / exhaust mufflers, shields or shrouds
- Noise-deadening material to equipment and fencing

Maintaining:

- Equipment mufflers and lubrication
- Pre-cast decking and plates to avoid rattling
- Smooth surfaces on construction sites and public ways to prevent unnecessary noise from surface irregularities.

Minimizing

- Noise from the use of backup alarms, using measures that meet OSHA regulations. The construction logistics has been designed such that the backing-up of equipment and trucks is limited.
- Use of self-adjusting ambient-sensitive backup alarms.
- Manually adjustable alarms on low setting
- Scheduling of activities so that alarm noise is minimized

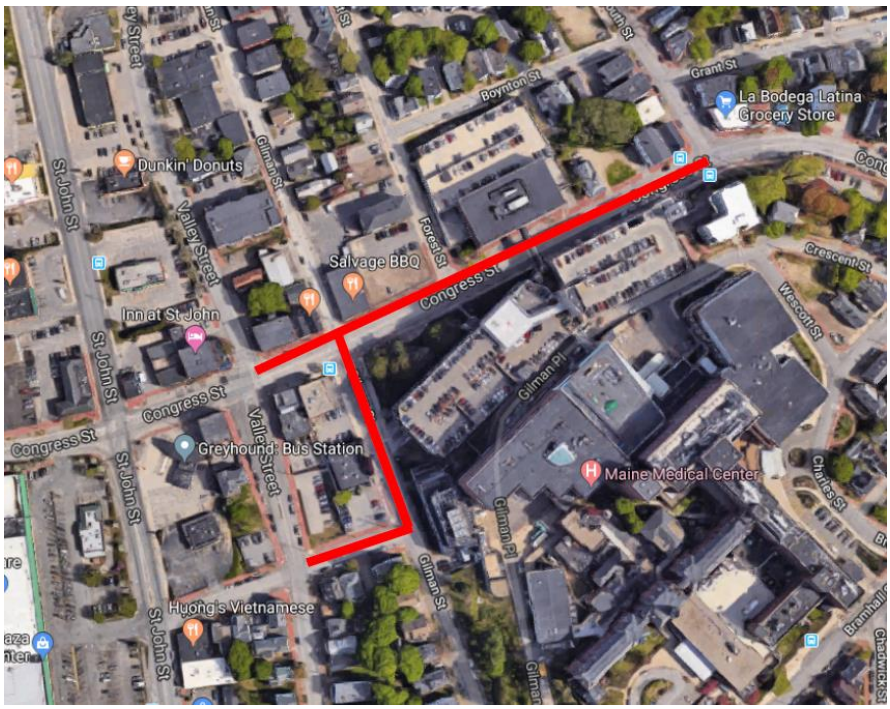
4.3 Air Monitoring

- Turner Construction and its subcontractor's shall employ dust, odor, and gas control measures to minimize the creation of airborne dusts, odors, and gases during the entire construction process. At a minimum, standard dust control techniques shall be employed where heavy equipment will be traveling, standing, or loading, such as watering down the site or utilizing dust control measures. All measures shall be taken in accordance with Turner's approved Health & Safety plan.
- Turner Construction and its subcontractors shall perform dustless street sweeping / vacuuming for all construction activities including demolition, excavation, slurry / soil mixing operations on an as needed basis.
- An air monitoring plan shall be developed by the Owner based on site contaminants of concern, particulate quantities / densities, and risk-based evaluations. The plan will be developed for off-site impacts. Turner Construction and its subcontractors will be responsible for on-site health and safety issues.
- The Owner will engage a qualified consultant to monitor for dust along the perimeter of the construction site. Results of this monitoring that indicate exceedances of air quality criteria will be immediately brought to the attention of Turner Construction. Turner and its subcontractors shall immediately address the site condition, including terminating construction activities to remedy the site conditions to the satisfaction of the Owner.
- Ductwork snorkels will be installed as required on building air intakes surrounding the job-site to minimize the amount of dust and construction vehicle gases being taken in through the air handling systems. The maintenance of the filters is by the individual building managers.

4.4 Vibration Monitoring

Site surveys will be completed:

- On Gilman St from Gilman/A to Gilman/Congress
- On A St from Gilman/A to Valley/A
- On Congress St from Weymouth/Congress to Valley/Congress



- The Maine Medical Center Project geotechnical engineer shall identify vibration-inducing: construction activities and work closely with the Turner to monitor vibration.
- Turner Construction Company and its subcontractors shall preauger Piles and other earthwork-induced vibrations (maximum peak particle velocity) to the limits outlined in the contract documents.
- The Owner shall conduct baseline vibration-level monitoring prior to construction and continuous monitoring of vibration during excavation. Vibration monitoring shall be conducted at the site perimeter locations and near adjacent buildings and other structures.
- It is acknowledged that episodic violations of the vibration criteria may result, primarily due to below grade obstructions. These obstructions shall be cleared in a manner that minimizes the impacts to neighbors.
- When a seismograph trigger level is reached or exceeded an email goes out to the Turner superintendent, Project Manager and Safety Engineer, the Maine Medical Center (MMC) Project Manager and Maine Medical Center safety and facilities staff. The following is the protocol that is followed.
- Events during work hours with the frequency between 5 hz. and 100 hz. and the peak particle velocity above the threshold values but below limiting values, Turner will investigate to determine if the event was caused by construction activities. If so determined, Turner will take steps to minimize the vibrations in the future.

- Turner will investigate and, if caused by construction, stop the activity, review the incident, and take steps to employ alternate means of construction to complete the task. Alternate means may include changes to the construction method being used or utilizing an alternate means of construction.
- The Contractor shall monitor groundwater levels before and during construction on a routine basis. Groundwater levels must be maintained within the allowable range.
- The discharge of pumped ground water shall be done in a manner as according to all required City, State and Federal Permits and approvals

5.0 Communication Strategies

5.1 Communication Plan

Turner will work with MMC's communications team to deliver a communications plan that encompasses:

- Plans for traffic management during Portland Seadogs games
- Plans for METRO bus stops and routes
- Implementation plans for all aspects of the detours outlined in the Maintenance of Traffic plan completed by Gorrill Palmer
- An emergency contacts list for the City of Portland including specifically Portland Police and Fire Departments.

5.2 Contacts, Distribution Lists

- Turner Construction shall develop a project contact list (e-mail addresses, office and cell phone numbers), to be posted by MMC on the project web site and supplied to Maine Medical Center (MMC) for 24/7 contacts.
- Turner Construction will request similar contact lists from the neighborhood associations (e-mail addresses, and phone numbers) of key contacts for the specific project.
- Turner Construction will set-up a project bulletin board for each Phase. These boards will be used as communication tools to the surrounding community. There will be a project website thru Maine Medical Center that also will communicate construction related activities to the community.
- Any last minute changes to the project schedule that may impact the neighborhood or Maine Medical Center (MMC) community will be communicated per section 2.3.
- Turner Construction will participate in the neighborhood council meetings as needed to discuss progress and issues.
- Turner shall maintain a log of all construction-related concerns, via the MMC website.
- MMC shall communicate final resolution of all complaints and concerns to the neighborhood, Maine Medical Center (MMC) community, and when appropriate, to the City of Portland.

5.3 Maintaining Bicycle and Pedestrian Circulation During Construction Activities

A temporary sidewalk or bike lane is not recommended by the Construction team. The construction fence will need to be maintained in the location outlined in the CMP for the majority of the project. It will be possible to set the construction fence back after significant structural, site work, and material deliveries are complete. Turner estimates that these activities will be completed in the Fall of 2022.

Share the road signs will be erected on Congress Street in each direction and Gilman Street prior to the roadway narrowing. These signs will remind drivers to be aware of bicyclists.

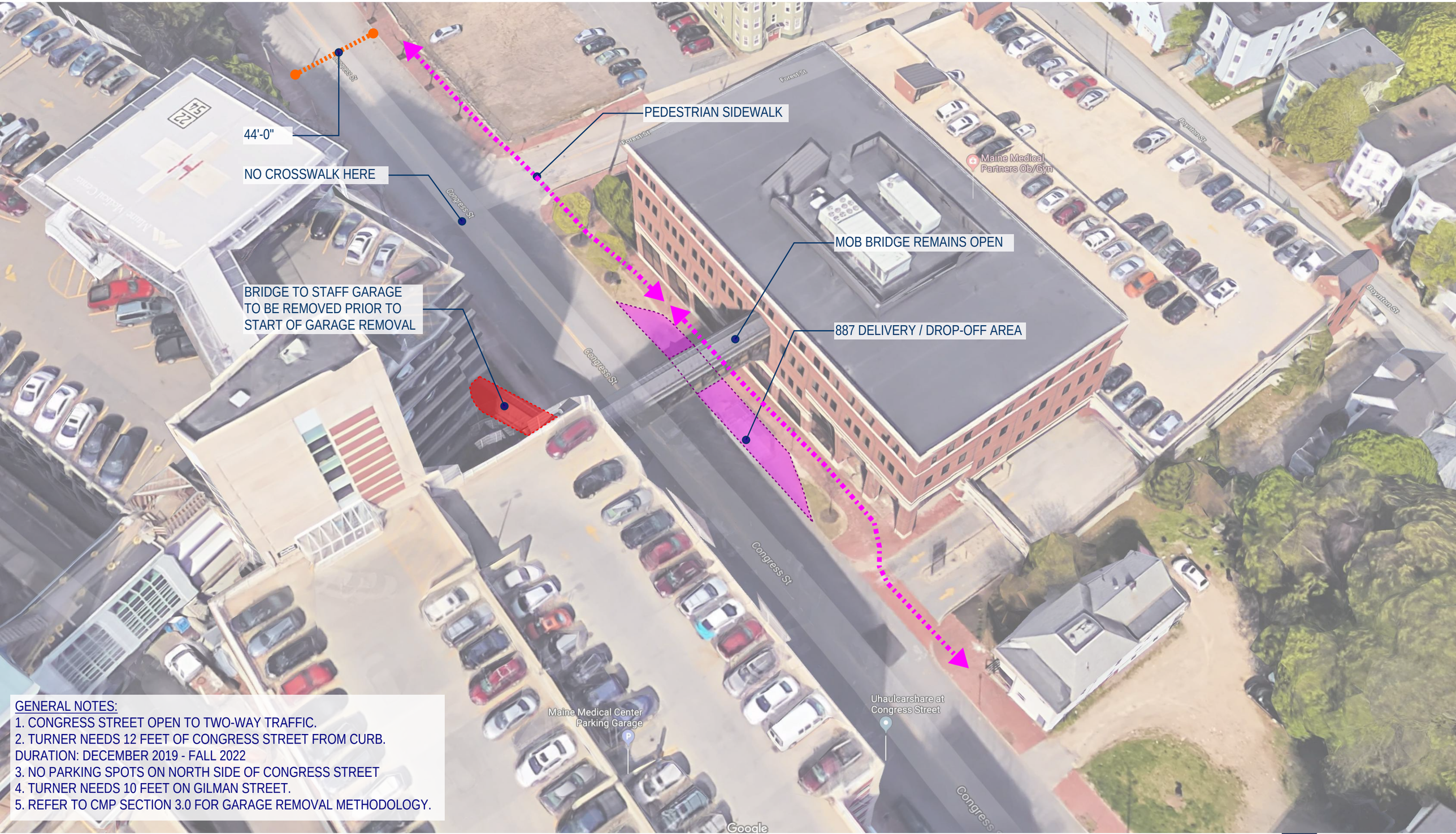
Maine Medical Center
MaineHealth

CONSTRUCTION MANAGEMENT PLAN

UPDATED [11-05-18]

[LOGISTICS PLANS & STUDIES]
CONGRESS STREET NEW CLINICAL TOWER

Turner

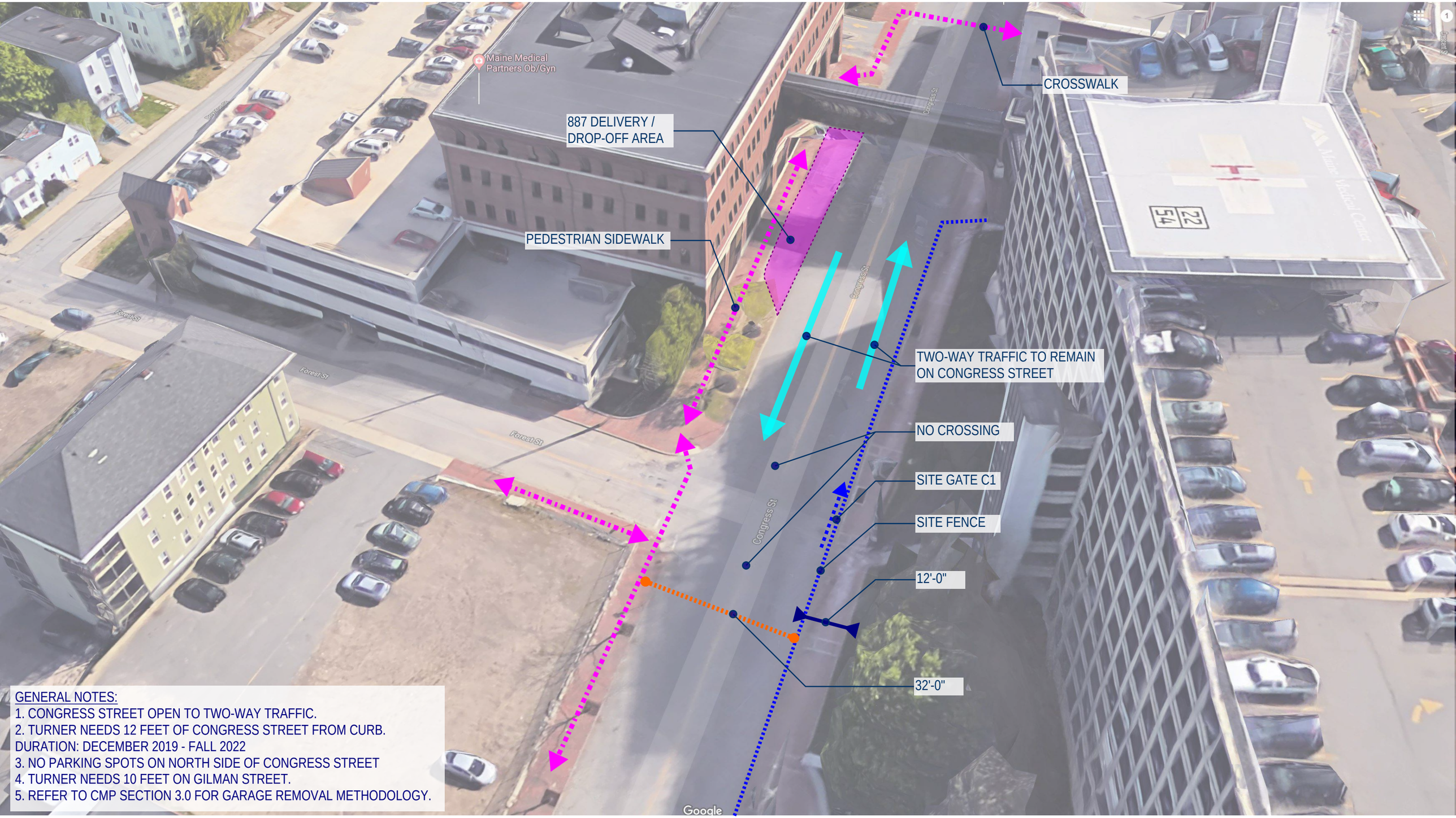


GENERAL NOTES:
1. CONGRESS STREET OPEN TO TWO-WAY TRAFFIC.
2. TURNER NEEDS 12 FEET OF CONGRESS STREET FROM CURB.
DURATION: DECEMBER 2019 - FALL 2022
3. NO PARKING SPOTS ON NORTH SIDE OF CONGRESS STREET
4. TURNER NEEDS 10 FEET ON GILMAN STREET.
5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

CONGRESS STREET NEW CLINICAL TOWER

Additions and Renovations [887 Delivery / Drop-Off] CONGRESS STREET PEDESTRIAN ROUTING

Turner



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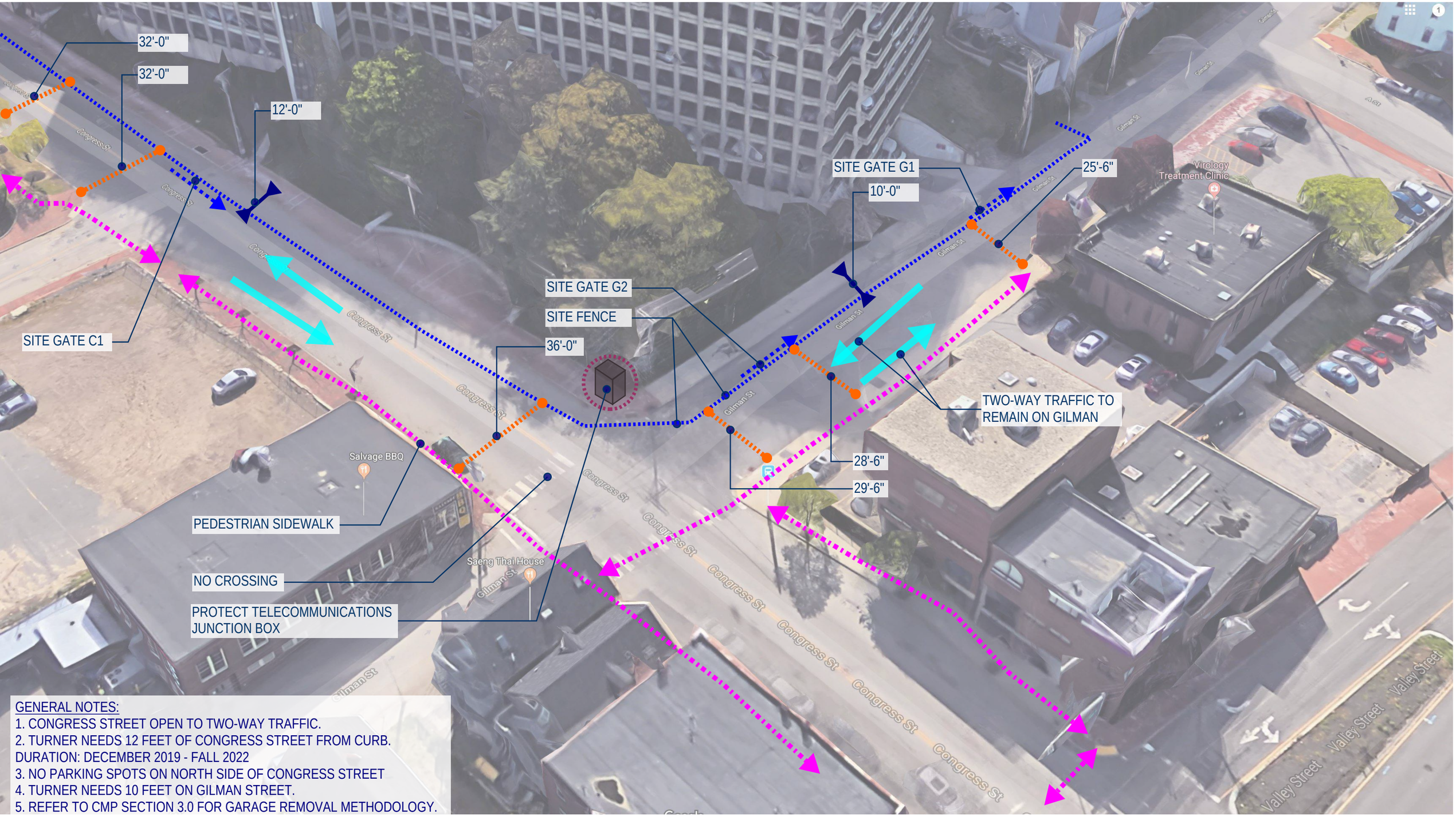
4. TURNER NEEDS 10 FEET ON GILMAN STREET.
5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

CONGRESS STREET NEW CLINICAL TOWER

Additions and Renovations [887 Delivery / Drop-Off] CONGRESS STREET PEDESTRIAN ROUTING

Turner

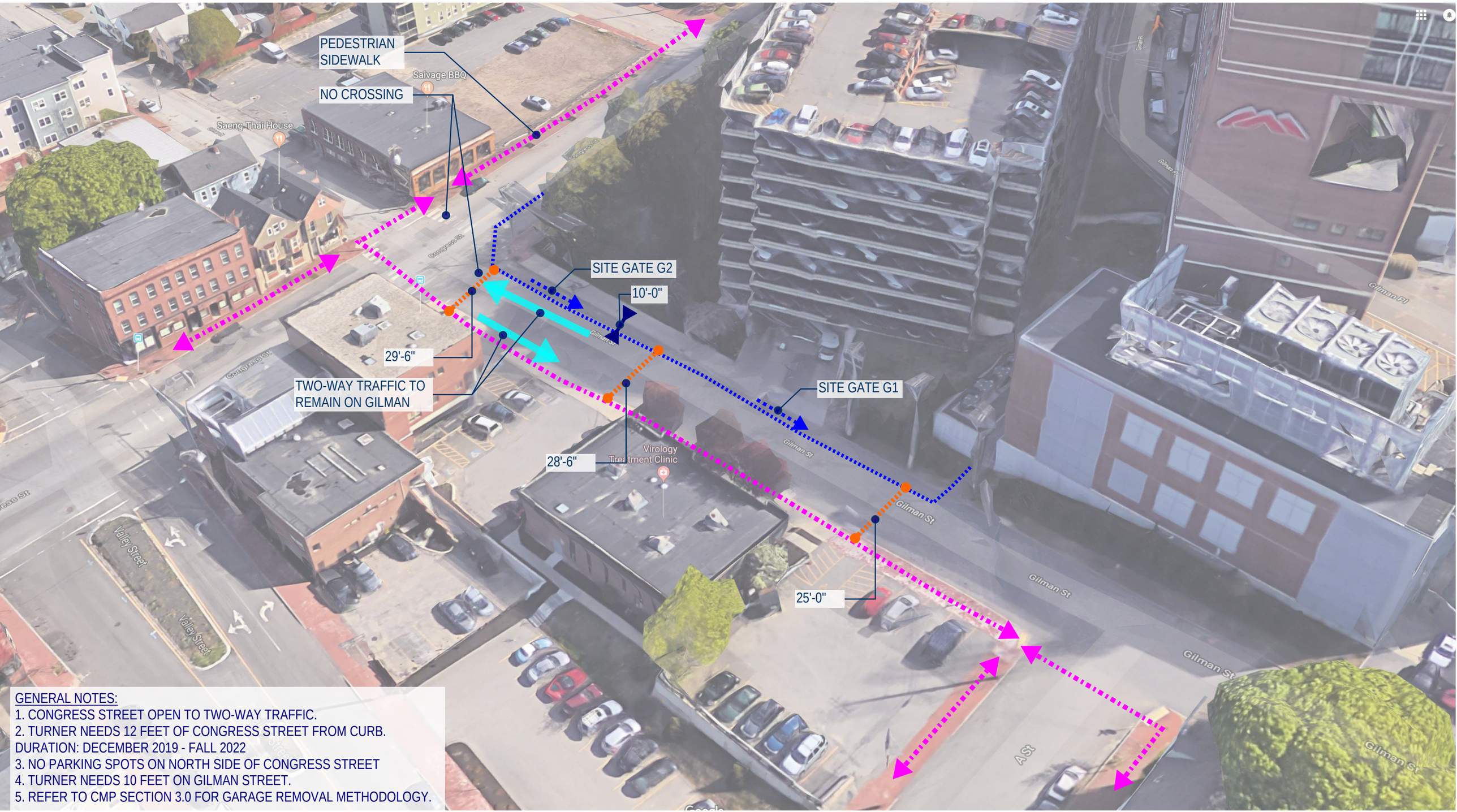


GENERAL NOTES:
1. CONGRESS STREET OPEN TO TWO-WAY TRAFFIC.
2. TURNER NEEDS 12 FEET OF CONGRESS STREET FROM CURB.
DURATION: DECEMBER 2019 - FALL 2022
3. NO PARKING SPOTS ON NORTH SIDE OF CONGRESS STREET
4. TURNER NEEDS 10 FEET ON GILMAN STREET.
5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

CONGRESS STREET NEW CLINICAL TOWER

Additions and Renovations [CONGRESS/GILMAN/VALLEY PEDESTRIAN ROUTING]

Turner

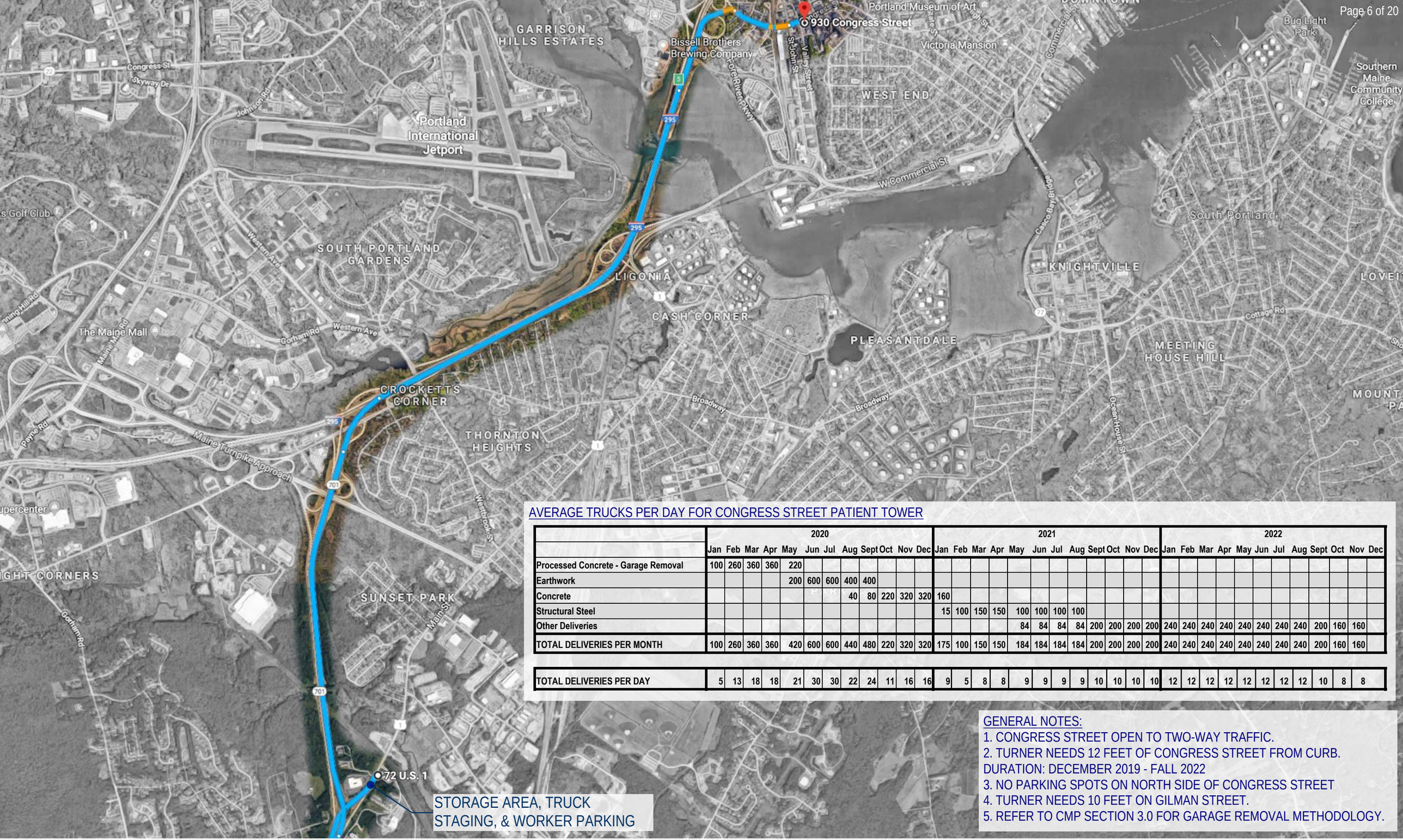


GENERAL NOTES:
1. CONGRESS STREET OPEN TO TWO-WAY TRAFFIC.
2. TURNER NEEDS 12 FEET OF CONGRESS STREET FROM CURB.
DURATION: DECEMBER 2019 - FALL 2022
3. NO PARKING SPOTS ON NORTH SIDE OF CONGRESS STREET
4. TURNER NEEDS 10 FEET ON GILMAN STREET.
5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

CONGRESS STREET NEW CLINICAL TOWER

Additions and Renovations [PEDESTRIAN ROUTING GIMAN & A STREET]

Turner



AVERAGE TRUCKS PER DAY FOR CONGRESS STREET PATIENT TOWER

	2020												2021												2022											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Processed Concrete - Garage Removal	100	260	360	360	220																															
Earthwork					200	600	600	400	400																											
Concrete								40	80	220	320	320	160																							
Structural Steel													15	100	150	150	100	100	100	100																
Other Deliveries																	84	84	84	84	200	200	200	200	240	240	240	240	240	240	240	240	200	160	160	
TOTAL DELIVERIES PER MONTH	100	260	360	360	420	600	600	440	480	220	320	320	175	100	150	150	184	184	184	184	200	200	200	200	240	240	240	240	240	240	240	240	200	160	160	
TOTAL DELIVERIES PER DAY	5	13	18	18	21	30	30	22	24	11	16	16	9	5	8	8	9	9	9	9	10	10	10	10	12	12	12	12	12	12	12	12	10	8	8	

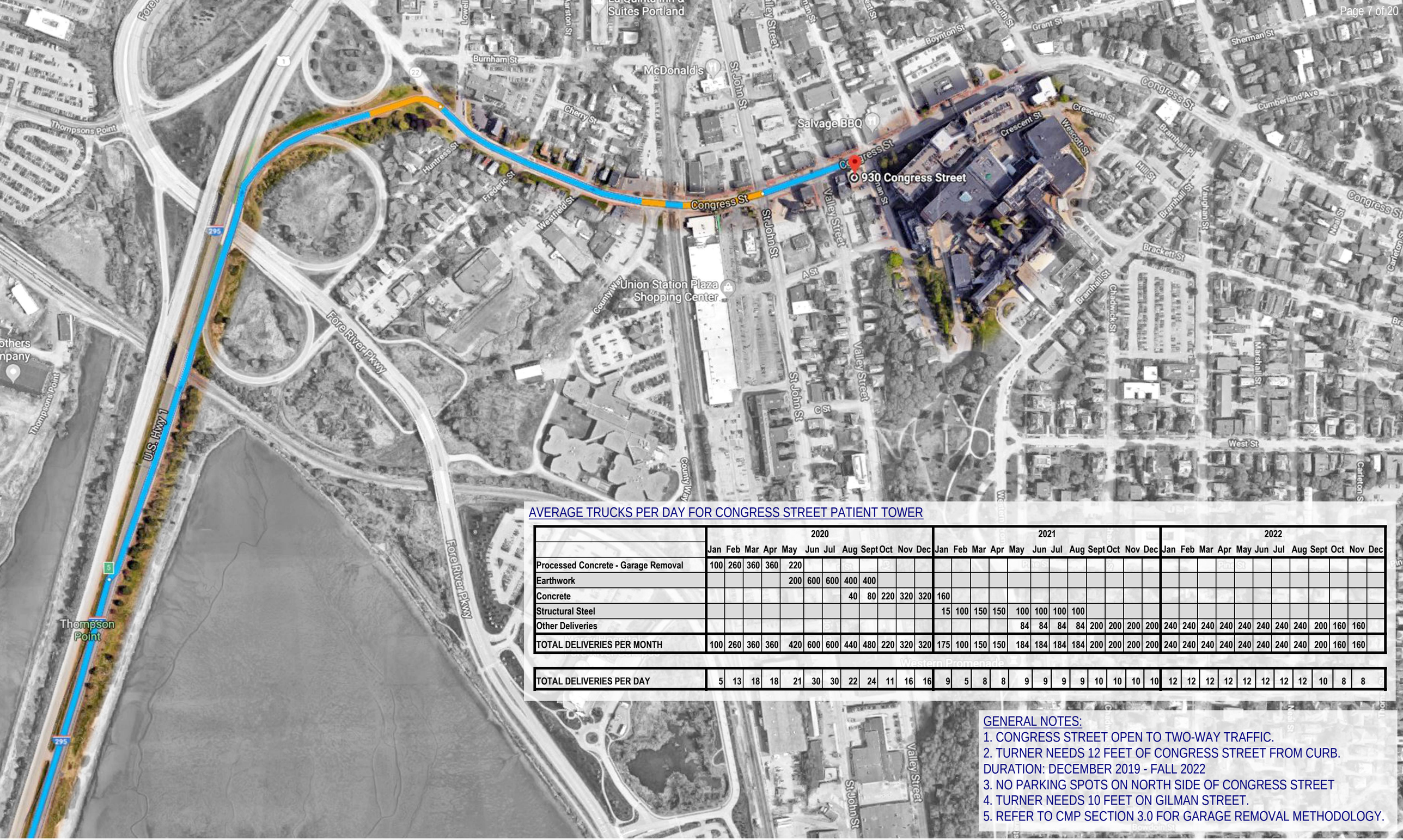
GENERAL NOTES:

1. CONGRESS STREET OPEN TO TWO-WAY TRAFFIC.
2. TURNER NEEDS 12 FEET OF CONGRESS STREET FROM CURB.
   DURATION: DECEMBER 2019 - FALL 2022
3. NO PARKING SPOTS ON NORTH SIDE OF CONGRESS STREET
4. TURNER NEEDS 10 FEET ON GILMAN STREET.
5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

CONGRESS STREET NEW CLINICAL TOWER

Additions and Renovations [TRAFFIC ROUTES] FROM US ROUTE 1, SCARBOROUGH

Turner



AVERAGE TRUCKS PER DAY FOR CONGRESS STREET PATIENT TOWER

	2020												2021												2022											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Processed Concrete - Garage Removal	100	260	360	360	220																															
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Other Deliveries																	84	84	84	84	200	200	200	200	240	240	240	240	240	240	240	240	200	160	160	
TOTAL DELIVERIES PER MONTH	100	260	360	360	420	600	600	440	480	220	320	320	175	100	150	150	184	184	184	184	200	200	200	200	240	240	240	240	240	240	240	240	200	160	160	
TOTAL DELIVERIES PER DAY	5	13	18	18	21	30	30	22	24	11	16	16	9	5	8	8	9	9	9	9	10	10	10	10	12	12	12	12	12	12	12	12	10	8	8	

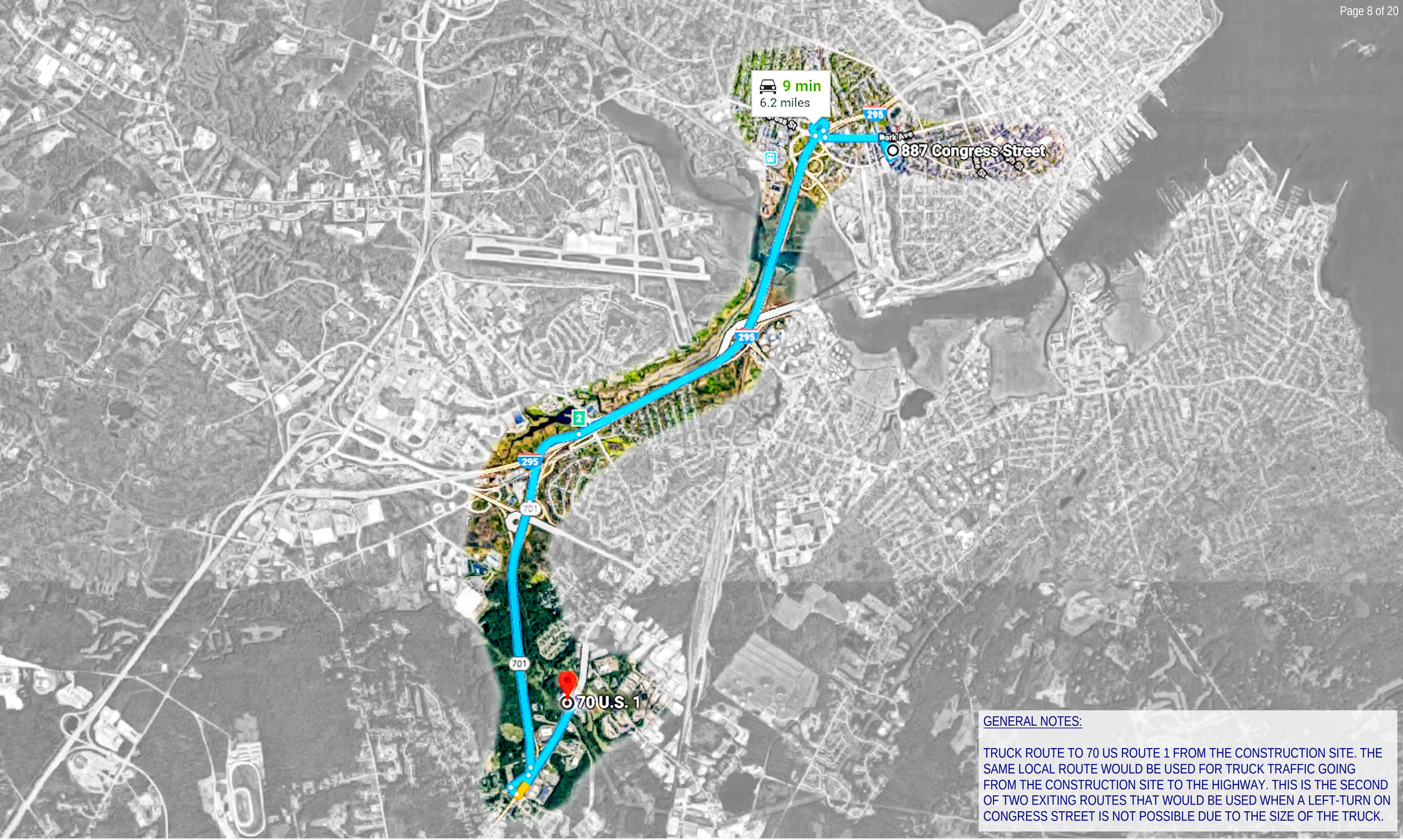
GENERAL NOTES:

1. CONGRESS STREET OPEN TO TWO-WAY TRAFFIC.
2. TURNER NEEDS 12 FEET OF CONGRESS STREET FROM CURB.
DURATION: DECEMBER 2019 - FALL 2022
3. NO PARKING SPOTS ON NORTH SIDE OF CONGRESS STREET
4. TURNER NEEDS 10 FEET ON GILMAN STREET.
5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

CONGRESS STREET NEW CLINICAL TOWER

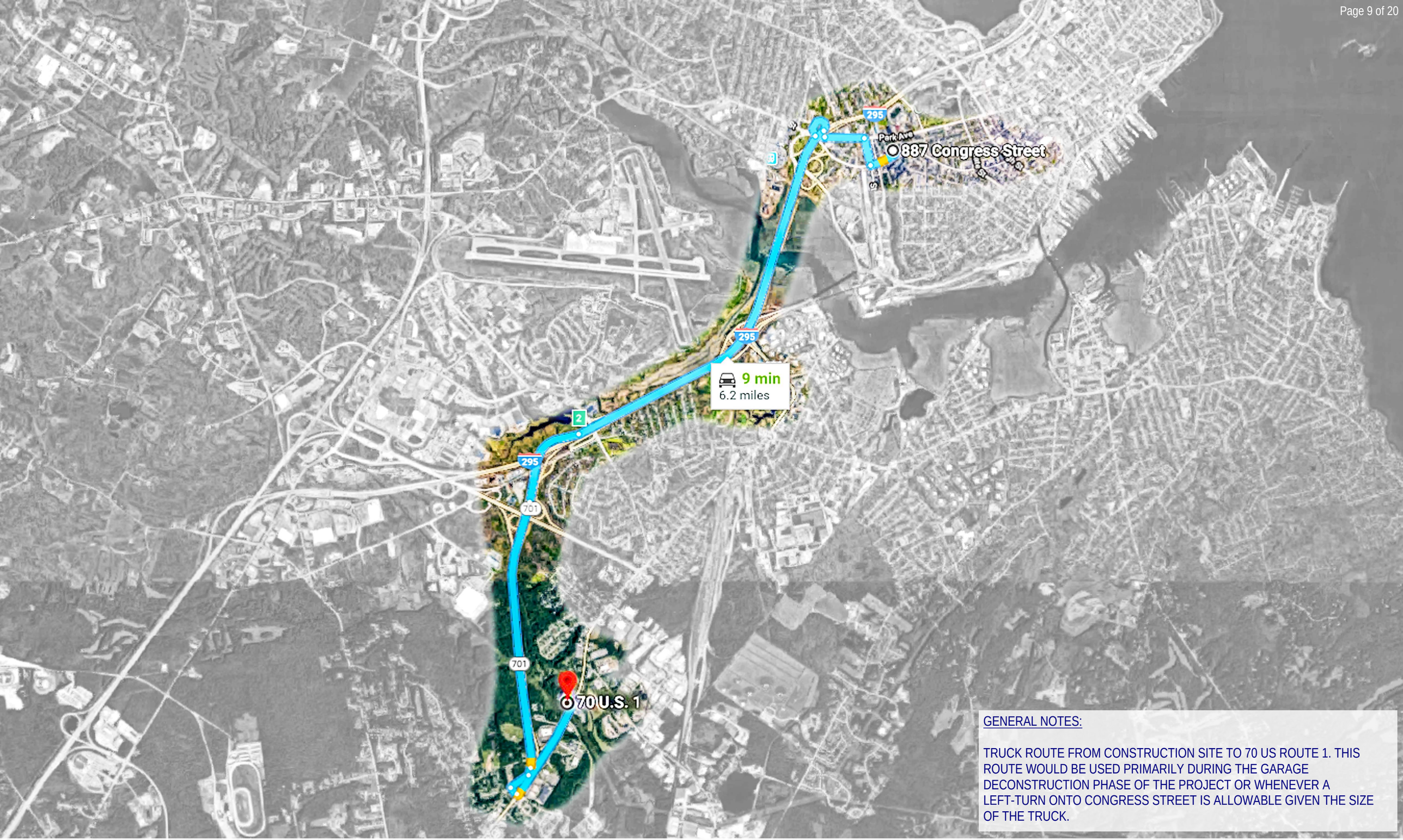
Additions and Renovations [TRAFFIC ROUTES] FROM US ROUTE 1, SCARBOROUGH

Turner



GENERAL NOTES:

TRUCK ROUTE TO 70 US ROUTE 1 FROM THE CONSTRUCTION SITE. THE SAME LOCAL ROUTE WOULD BE USED FOR TRUCK TRAFFIC GOING FROM THE CONSTRUCTION SITE TO THE HIGHWAY. THIS IS THE SECOND OF TWO EXITING ROUTES THAT WOULD BE USED WHEN A LEFT-TURN ON CONGRESS STREET IS NOT POSSIBLE DUE TO THE SIZE OF THE TRUCK.



GENERAL NOTES:

TRUCK ROUTE FROM CONSTRUCTION SITE TO 70 US ROUTE 1. THIS ROUTE WOULD BE USED PRIMARILY DURING THE GARAGE DECONSTRUCTION PHASE OF THE PROJECT OR WHENEVER A LEFT-TURN ONTO CONGRESS STREET IS ALLOWABLE GIVEN THE SIZE OF THE TRUCK.

2019						2020												2021												2022											
JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.

TEMPORARY PEDESTRIAN BRIDGE INSTALLED PRIOR TO STRUCTURAL GARAGE REMOVAL

FILTERS ADDED TO PROTECT EXISTING MECHANICAL LOUVERS

ALL GARAGE RETAINING WALL TIE-BACKS (BEYOND) INSTALLED PRIOR TO START OF STRUCTURAL GARAGE REMOVAL

BEGIN SIDEWALK CLOSURE AT PROJECT START - DECEMBER 2019

CONGRESS STREET

FOREST STREET

GILMAN STREET

OVERHEAD POWER LINES TO BE RELOCATED

ELECTRICAL WORK ACROSS CONGRESS STREET.

GENERAL NOTES:
1. CONGRESS STREET OPEN TO TWO-WAY TRAFFIC.
2. TURNER NEEDS 12 FEET OF CONGRESS STREET FROM CURB.
DURATION: DECEMBER 2019 - FALL 2022
3. NO PARKING SPOTS ON NORTH SIDE OF CONGRESS STREET
4. TURNER NEEDS 10 FEET ON GILMAN STREET.
5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

CONGRESS STREET NEW CLINICAL TOWER

Additions and Renovations [Structural Garage Removal Logistics Plan]

Turner

2019						2020												2021												2022											
JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.

DISONNECT BRIDGE TO STAFF GARAGE

BRIDGE TO MOB REMAINS OPEN

CONSTRUCTION GATE C1 - 30' ROLLING GATE

CONGRESS STREET

FOREST STREET

FAIRPOINT TELECOMM CABINET LOCATION

FILTERS ADDED TO PROTECT EXISTING MECHANICAL LOUVERS

ROAD (BEYOND) TO BE CLOSED DURING STRUCTURAL GARAGE REMOVAL.

PROTECT EXISTING TRANSFORMER BY TRENCH BOX & ROAD PLATES.

ALL GARAGE RETAINING WALL TIE-BACKS (BEYOND) INSTALLED PRIOR TO START OF STRUCTURAL GARAGE REMOVAL. WORK IN STAFF GARAGE TO START IN SPRING OF 2019

CONSTRUCTION ACCESS GATE G2 - 30' ROLLING GATE

AREA TO BE FILLED & LEVELED WITH GRAVEL (PRIOR TO STRUCTURAL GARAGE REMOVAL)

GILMAN STREET

OVERHEAD POWER LINES TO BE RELOCATED

CONSTRUCTION ACCESS GATE G1 - 30' ROLLING GATE

GENERAL NOTES:

1. CONGRESS STREET OPEN TO TWO-WAY TRAFFIC.
2. TURNER NEEDS 12 FEET OF CONGRESS STREET FROM CURB.

DURATION: DECEMBER 2019 - FALL 2022

3. NO PARKING SPOTS ON NORTH SIDE OF CONGRESS STREET
4. TURNER NEEDS 10 FEET ON GILMAN STREET.
5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

CONGRESS STREET NEW CLINICAL TOWER

Additions and Renovations [Structural Garage Removal Logistics Plan]

Turner

2019						2020												2021												2022											
JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.

DISONNECT BRIDGE TO STAFF GARAGE

BRIDGE TO MOB REMAINS OPEN

CONSTRUCTION GATE C1 - 30' ROLLING GATE

DIRECTION OF STRUCTURAL GARAGE REMOVAL.

BEGIN STRUCTURAL GARAGE REMOVAL OF EXISTING CONGRESS STREET GARAGE WITH LONG ARM EXCAVATORS

INSTALL BREAK-AWAY TARPING SYSTEM FOR DUST AND DEBRIS CONTROL

HIGH REACH EXCAVATOR WITH CONCRETE PROCESSOR

CONSTRUCTION ACCESS GATE G2 - 30' ROLLING GATE

ROUGH TERRAIN CRANE WITH DEBRIS SHIELD TO BE UTILIZED AS PROTECTION.

SITE CLEARING AND REMOVAL OF EXISTING TREES AND FOLIAGE

REMOVAL OF EXISTING UTILITY POLES ON CONGRESS AND GILMAN STREET TO OCCUR BEFORE DEMOLITION STARTS

CONSTRUCTION ACCESS GATE G1 - 30' ROLLING GATE

CONGRESS STREET

GILMAN STREET

FOREST STREET

GENERAL NOTES:

1. CONGRESS STREET OPEN TO TWO-WAY TRAFFIC.
2. TURNER NEEDS 12 FEET OF CONGRESS STREET FROM CURB.
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5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

CONGRESS STREET NEW CLINICAL TOWER

Additions and Renovations [Structural Garage Removal Logistics Plan]

Turner

2019						2020												2021												2022											
JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.

DISONNECT BRIDGE TO STAFF GARAGE

BRIDGE TO MOB REMAINS OPEN

CONSTRUCTION GATE C1 - 30' ROLLING GATE

CONTINUE STRUCTURAL GARAGE REMOVAL OF CONGRESS STREET GARAGE WITH LONG ARM EXCAVATORS

INSTALL BREAK-AWAY TARPING SYSTEM FOR DUST AND DEBRIS CONTROL

CONSTRUCTION ACCESS GATE G2 - 30' ROLLING GATE

REMOVAL OF EXISTING UTILITY POLES ON CONGRESS AND GILMAN STREET TO OCCUR BEFORE DEMOLITION STARTS

CONSTRUCTION ACCESS GATE G1 - 30' ROLLING GATE

CONGRESS STREET

FOREST STREET

GILMAN STREET

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CONGRESS STREET NEW CLINICAL TOWER

Additions and Renovations [Structural Garage Removal Logistics Plan]

Turner

2019						2020												2021												2022											
JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.

UNDERPINNING OF EXISTING GARAGE FOUNDATION WALLS AND ELEVATOR LOBBY WALLS

BRIDGE ACCESS TO GARAGE TO REMAIN.

CONSTRUCTION GATE C1 - 30' ROLLING GATE

MANGATE

ALL GARAGE RETAINING WALL TIE-BACKS (BEYOND) INSTALLED PRIOR TO START OF STRUCTURAL GARAGE REMOVAL

CONSTRUCTION ACCESS GATE G2 - 30' ROLLING GATE

TEMPORARY EARTH RETENTION.

CONSTRUCTION ACCESS GATE G1 - 30' ROLLING GATE

GENERAL NOTES:
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DURATION: DECEMBER 2019 - FALL 2022
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4. TURNER NEEDS 10 FEET ON GILMAN STREET.
5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

WORK SCOPE:
1. EXCAVATION
2. EARTH RETENTION - PERMANENT
3. FOUNDATIONS REMOVAL
4. NEW FOUNDATIONS
5. UTILITIES INSTALLATION
6. TEMP. SUPPORT OF EXCAVATION

CONGRESS STREET NEW CLINICAL TOWER

Construction Management Plan [Logistics Plan] - Earth Retention

Turner

2019						2020												2021												2022											
JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.

CONSTRUCTION GATE C1
- 30' ROLLING GATE

CONSTRUCTION ACCESS
GATE G2 - 30' ROLLING GATE

CONSTRUCTION ACCESS GATE G1 -
30' ROLLING GATE

GENERAL NOTES:
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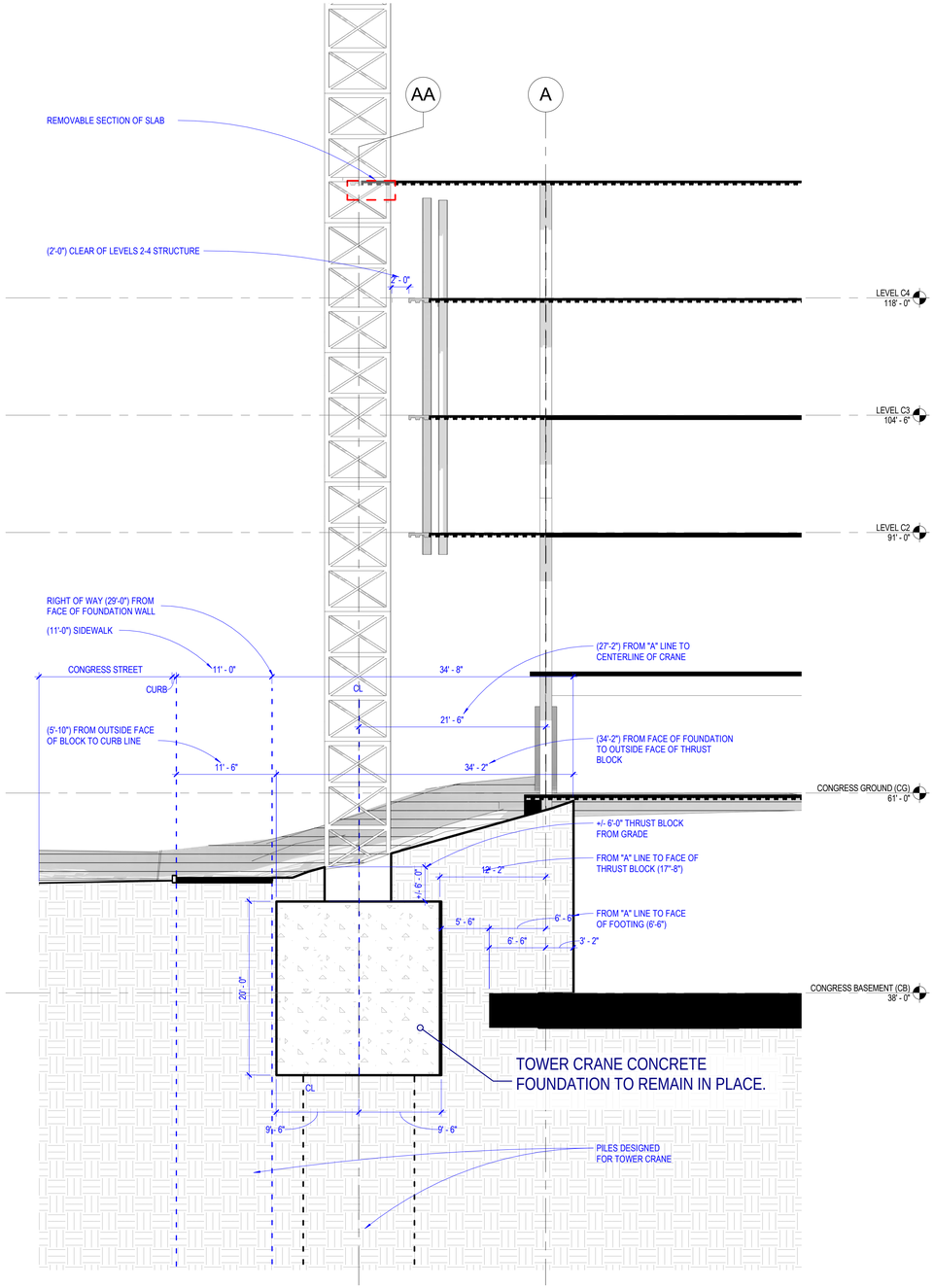
4. TURNER NEEDS 10 FEET ON GILMAN STREET.
5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

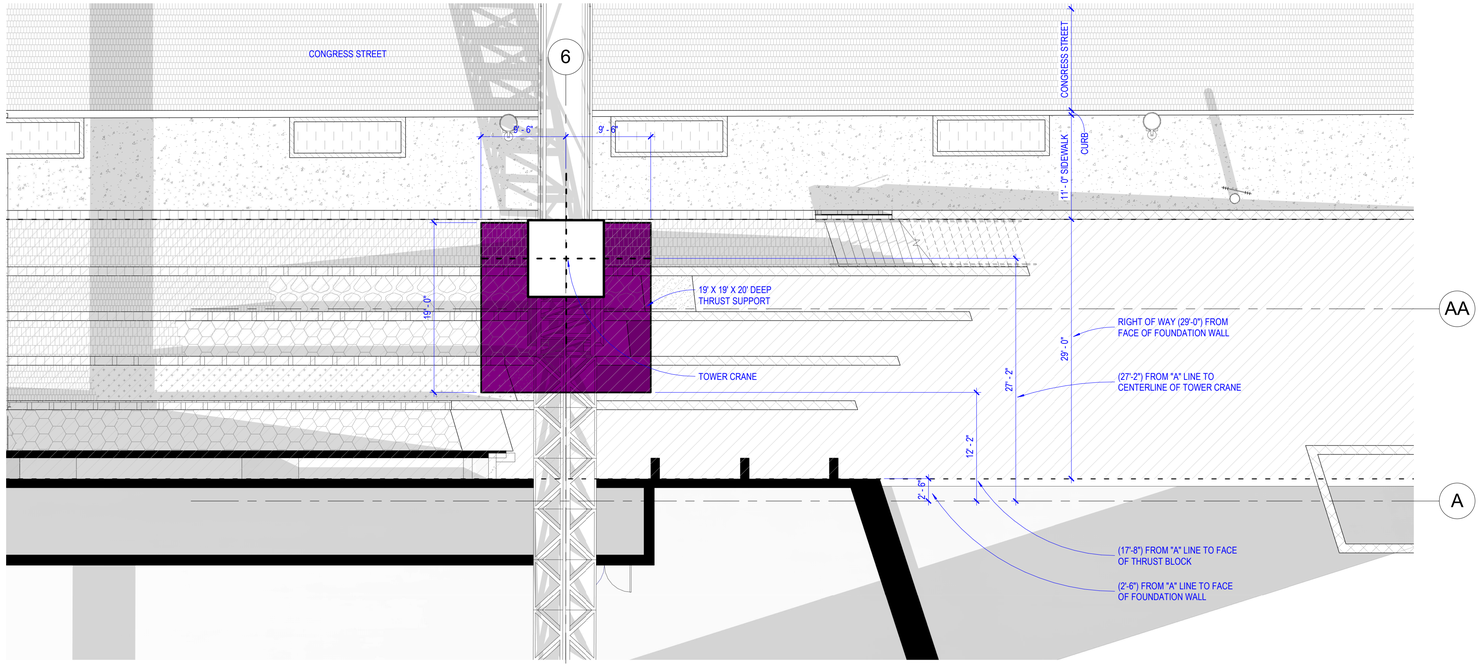
WORK SCOPE:
1. FOUNDATIONS - FOOTINGS & WALLS
2. MATT BASEMENT SLAB
3. RIGID INSULATION AND SECANT EARTH RETENTION
4. INSTALL TOWER CRANE BASE

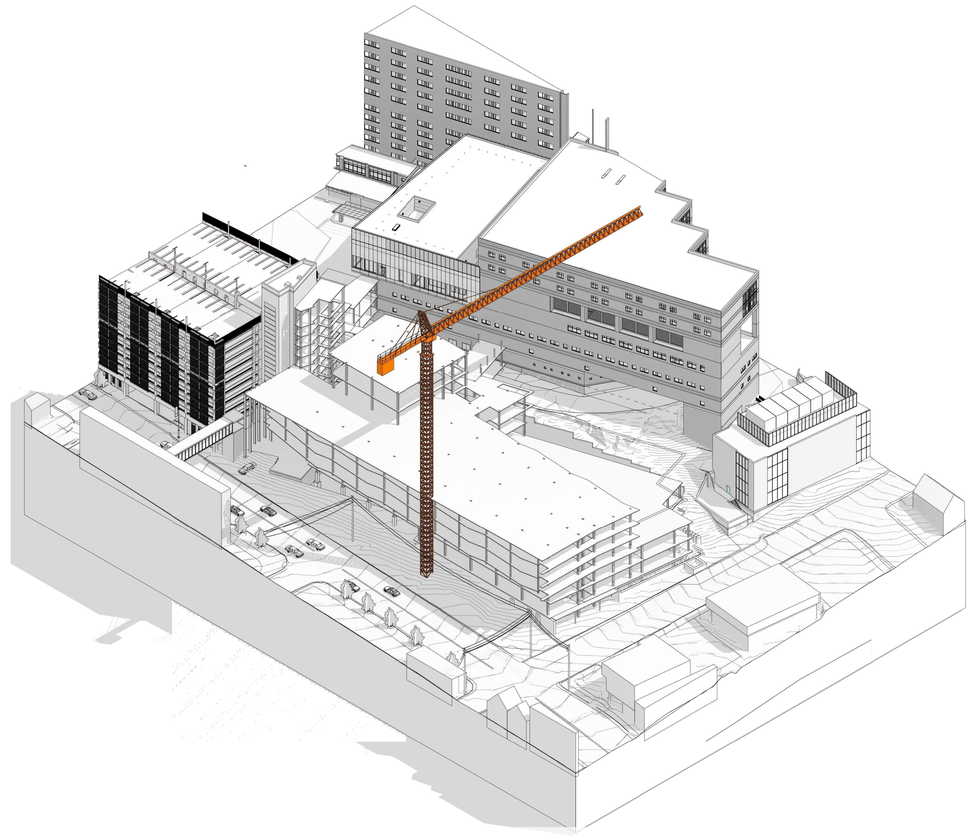
CONGRESS STREET NEW CLINICAL TOWER

Construction Management Plan [Logistics Plan] - Foundations

Turner







WORK SCOPE:

1. CONCRETE BASE INSTALLATION IN SUMMER OF 2020
2. TOWER CRANE BUILD IN NOVEMBER/DECEMBER 2020
3. LOCALIZED CONGRESS STREET ROAD CLOSURE - TWO WAY TRAFFIC MAINTAINED

CONGRESS STREET NEW CLINICAL TOWER

Congress Street Tower Crane Location & Detail [Logistics Plan]

Turner

2019						2020											2021												2022											
JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.

TRUCK PATH THROUGH SITE.

CONSTRUCTION GATE C1
- 30' ROLLING GATE

TOWER
CRANE

HOIST

CONSTRUCTION ACCESS
GATE G2 - 30' ROLLING GATE

CONSTRUCTION ACCESS GATE G1 -
30' ROLLING GATE

GENERAL NOTES:
1. CONGRESS STREET OPEN TO TWO-WAY TRAFFIC.
2. TURNER NEEDS 12 FEET OF CONGRESS STREET FROM CURB.
DURATION: DECEMBER 2019 - FALL 2022
3. NO PARKING SPOTS ON NORTH SIDE OF CONGRESS STREET
4. TURNER NEEDS 10 FEET ON GILMAN STREET.
5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

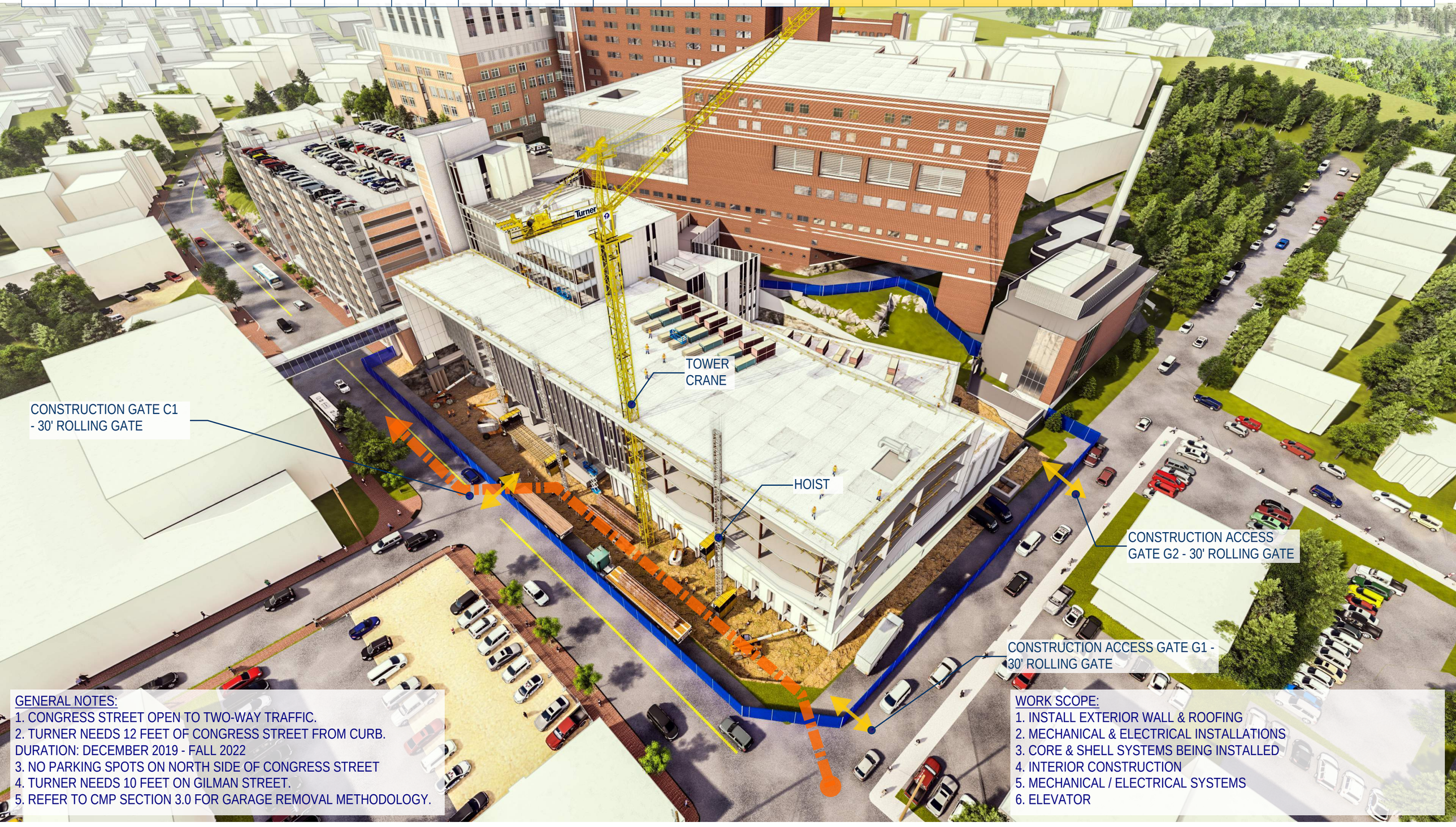
WORK SCOPE:
1. CONCRETE BASE INSTALLATION IN SUMMER OF 2020
2. TOWER CRANE BUILD IN NOVEMBER/DECEMBER 2020
3. LOCALIZED CONGRESS STREET ROAD CLOSURE - TWO WAY TRAFFIC MAINTAINED
4. INSTALL STRUCTURAL STEEL & DECK
5. PLACE CONCRETE SLAB
6. SPRAY ON FIREPROOFING

CONGRESS STREET NEW CLINICAL TOWER

Construction Management Plan [Logistics Plan] - Structure

Turner

2019						2020												2021												2022											
JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.



CONGRESS STREET NEW CLINICAL TOWER

Construction Management Plan [Logistics Plan] - Exterior Envelope

Turner

2019						2020												2021												2022											
JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.

CONSTRUCTION GATE C1
- 30' ROLLING GATE

CONSTRUCTION ACCESS
GATE G2 - 30' ROLLING GATE

CONSTRUCTION ACCESS GATE G1 -
30' ROLLING GATE

GENERAL NOTES:
1. CONGRESS STREET OPEN TO TWO-WAY TRAFFIC.
2. TURNER NEEDS 12 FEET OF CONGRESS STREET FROM CURB.
DURATION: DECEMBER 2019 - FALL 2022
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4. TURNER NEEDS 10 FEET ON GILMAN STREET.
5. REFER TO CMP SECTION 3.0 FOR GARAGE REMOVAL METHODOLOGY.

WORK SCOPE:
1. INTERIOR PATIENT ROOM FITOUT
2. CRITICAL CARE SUITES & ORs
3. MAIN LOBBY & PLUMBING SPACES FITOUT
4. SITE WORK AND HARDSCAPE

CONGRESS STREET NEW CLINICAL TOWER

Construction Management Plan [Logistics Plan] - Interior Fitout

Turner

2019						2020												2021												2022											
JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.

WORK SCOPE:
1. INSPECTIONS
2. CLEANING
3. MEDICAL EQUIPMENT
4. SITE IMPROVEMENTS

CONGRESS STREET NEW CLINICAL TOWER

Construction Management Plan [Logistics Plan] - Commissioning and Completion

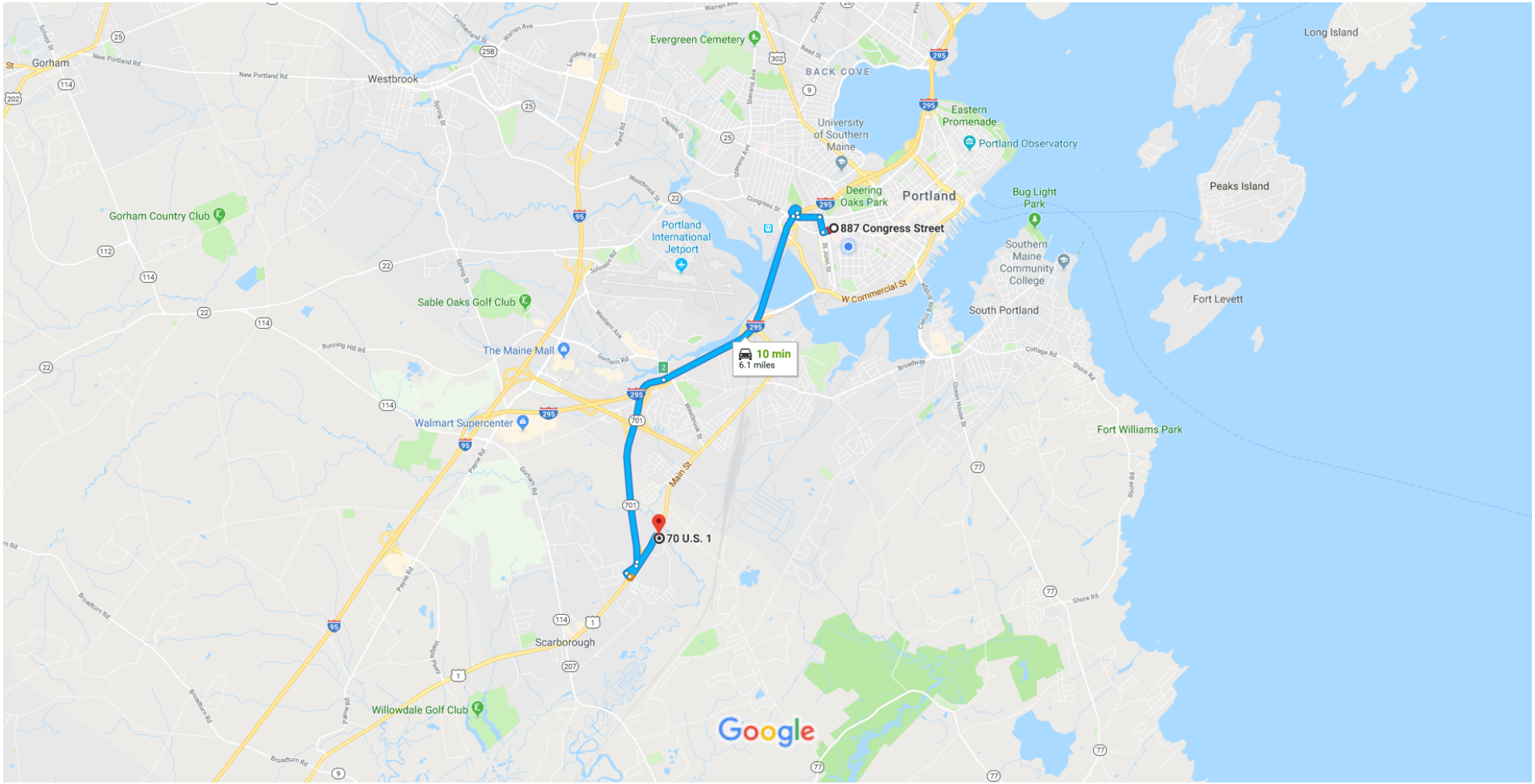
Turner

Google Maps

887 Congress St, Portland, ME 04102 to 70 US-1, Scarborough, ME 04074

Drive 6.1 miles, 10 min

Truck route from construction site to 70 US Route 1. This route would be used primarily during the garage deconstruction phase of the project or whenever a left-turn onto Congress St is allowable given the size of the truck.



887 Congress St

Portland, ME 04102

Get on I-295 S/US-1 S from St John St and Park Ave

3 min (0.8 mi)

1. Head southwest on Congress St toward Gilman St

0.1 mi

2. Turn right at the 3rd cross street onto St John St

0.2 mi

3. Turn left onto Park Ave

0.2 mi

4. Continue onto Congress St

295 ft

5. Slight right onto the Interstate 295 S/U.S. 1 ramp to So Portland

0.2 mi

Continue on I-295 S. Take ME-701 to US-1 S

5 min (4.6 mi)

6. Merge onto I-295 S/US-1 S
   Continue to follow I-295 S

2.4 mi

7. Use the right 2 lanes to take exit 2 toward U.S. 1 S/Scarborough/Old Orchard

0.6 mi

8. Continue onto ME-701

1.6 mi

Continue on US-1 N. Drive to Campus Dr

2 min (0.8 mi)

9. Use the right lane to merge onto US-1 S

243 ft

10. Slight right onto 1st St

0.1 mi

11. Turn left at the 1st cross street onto Green Acres Ln

325 ft

12. Use the right lane to turn left onto US-1 N

0.5 mi

13. Turn right onto Campus Dr

207 ft

70 US-1

Scarborough, ME 04074

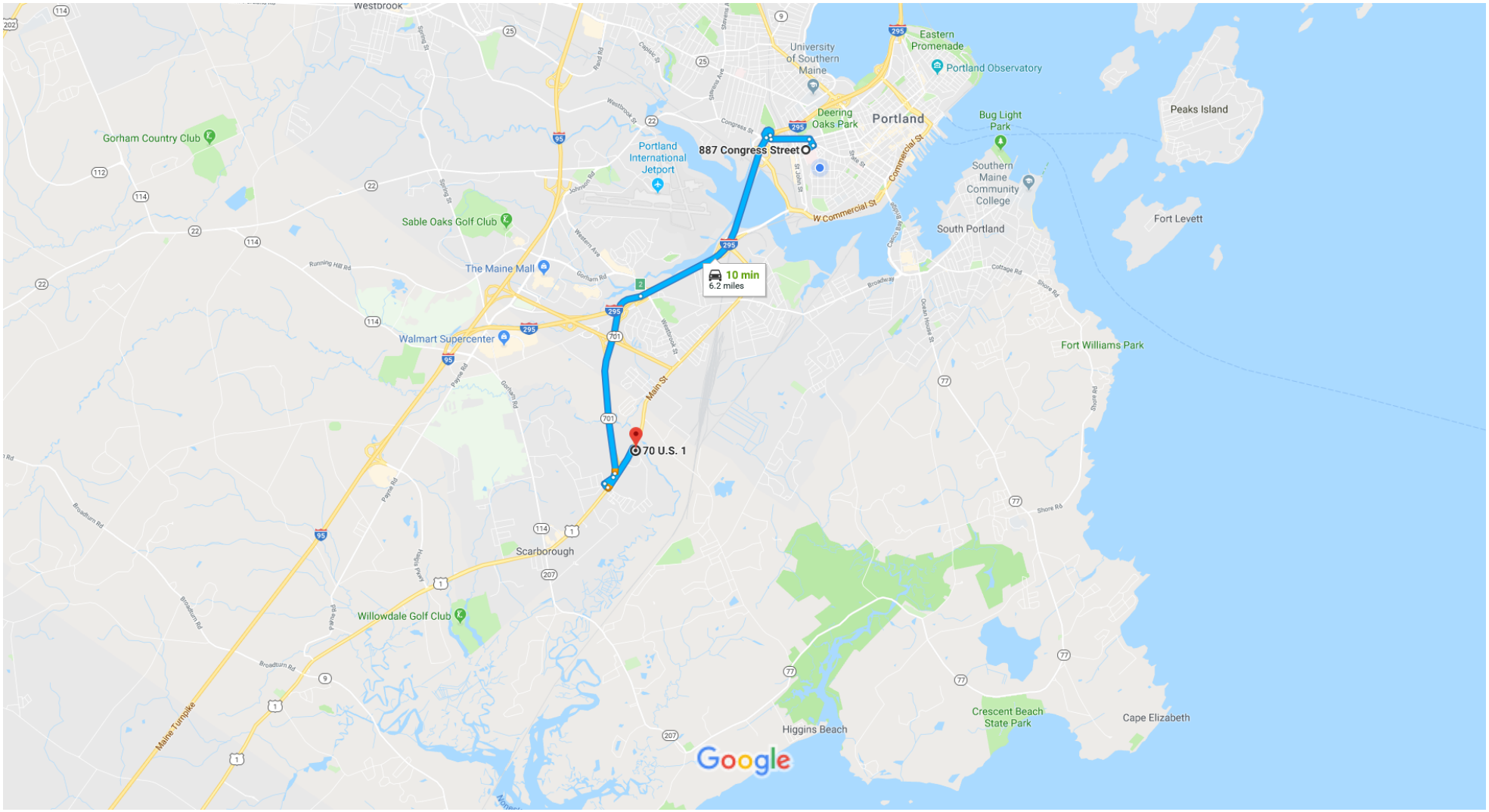
These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Google Maps

887 Congress St, Portland, ME 04102 to 70 US-1, Scarborough, ME 04074

Drive 6.2 miles, 10 min

Truck route to 70 US Route 1 from the construction site. The same local route would be used for truck traffic going from the construction site to the highway. This is the second of two exiting routes that would be used when a left-turn on Congress St is not possible due to the size of the truck.



Map data ©2018 Google 5000 ft

887 Congress St

Portland, ME 04102

Get on I-295 S/US-1 S from Park Ave

3 min (0.9 mi)

1. Head northeast on Congress St toward Weymouth St

0.1 mi

2. Turn left onto Weymouth St

443 ft

3. Turn left onto Park Ave

0.4 mi

4. Continue onto Congress St

295 ft

5. Slight right onto the Interstate 295 S/U.S. 1 ramp to So Portland

0.2 mi

Continue on I-295 S. Take ME-701 to US-1 S

5 min (4.6 mi)

6. Merge onto I-295 S/US-1 S
   Continue to follow I-295 S

2.4 mi

7. Use the right 2 lanes to take exit 2 toward U.S. 1 S/Scarborough/Old Orchard

0.6 mi

8. Continue onto ME-701

1.6 mi

Continue on US-1 N. Drive to Campus Dr

2 min (0.8 mi)

9. Use the right lane to merge onto US-1 S

243 ft

10. Slight right onto 1st St

0.1 mi

11. Turn left at the 1st cross street onto Green Acres Ln

325 ft

12. Use the right lane to turn left onto US-1 N

0.5 mi

13. Turn right onto Campus Dr

207 ft

70 US-1

Scarborough, ME 04074

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L

WRITTEN SUBMISSION 19 – LANDSCAPING AND LANDSCAPE PRESERVATION
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THERE ARE MATURE EXISTING TREES ON THE SITE, HOWEVER, IT IS NOT POSSIBLE TO PRESERVE THEM WITH DEMOLITION OPERATIONS AND NEW CONSTRUCTION .

WRITTEN SUBMISSION 11 – LOADING AND SERVICING
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

L

THE PROJECT DOES NOT INCLUDE ANY LOADING OR SERVICE AREAS. THE NEW ADDITION WILL BE SERVICED FROM THE EXISTING LOADING DOCKS NEAR THE REAR OF THE BUILDING.

Level III Site Plan Neighborhood Meeting
October 17, 2018, 5:30PM – 7:00PM
Maine Medical Center – Congress Building Site Plan Application
East Tower 2 & 3

LL

Minutes

Attendees:

Karen Snyder	Richard Parsons
Troy Bennett	Gregg Scholler
Steve Whittier	Dominic Gagnon
George Rheavld	Matt Wickenheiser
Kris Hall	Randy Dunton
Thomas Cummings	Jeff Sanders
	Al Green
	Dennis Morelli

I. Welcome

Jeff Sanders extended a welcome to the attendees and discussed the objectives and previewed the content of the presentation.

II. Project Background and Need & Review Process

- MMC struggles to meet the daily patient care need due to capacity limitations created by semi-private rooms.
- A neighborhood attendee questioned the validity and statistical significance of the information MMC shared on a slide demonstrating a day at MMC. MMC explained the information is an example of a typical day at MMC and not meant to be statistically significant but that it is a scenario that MMC experiences often.
- Staff at MMC park in one of 8 different locations near MMC's Bramhall campus. This is a neighborhood and staff dissatisfier.
- City of Portland review of MMC's facility project is broken down into three site plan applications: 1. East Tower & Visitor garage (approved), 2. St John Garage (approved), 3. Congress Building (application submitted).
- Neighborhood attendees had several questions about the orientation of the proposed MMC buildings, the institutional overlay zone (IOZ), and the improvements to the right-of-way that were approved as part of the St John Street Garage site plan. Others questions were as follows:
    - Q: Why didn't MMC build a bigger garage?
        - A: MMC feels that the proposed garage is sized appropriately for MMC's needs.
    - Q: Will the garage be built of quality materials that last a long time?
        - A: Yes. Adhering to recommended maintenance schedules is also important when considering the lifespan of any building. MMC intends to adhere to all recommended maintenance schedules.
    - Q: How close is the proposed garage to the 222 St John historic building?

        - A: Less than 100'. MMC presented to the Historic Preservation board as required by City of Portland regulations.
    - Q: What beautification efforts are planned in the neighborhood?
        - A: The Planning Board approved plans submitted in MMC's St John Garage site plan application to replace broken or unsafe sidewalks, improve lighting, and add pedestrian street crossings between the new garage and MMC's Bramhall campus.

III. Design

- MMC reviewed the proposed design drivers of the Congress building, shared renderings of the proposed buildings, and discussed how each of the design guidelines outlined in MMC's institutional development plan (IDP) are met.
- A neighborhood attendee commented on the design of the building's façade at the street level on the corner of Gilman St and Congress St. The attendee felt that the design guideline to limit blank facades was not met by the proposed design. MMC shared that the employee entrance was added in part to address and meet the "limit blank facades" design guideline.
- One resident questioned the need to remove a large tree; MMC responded with information about trees being added and the inclusion of 2 green rooftop gardens in the new building's design.
- The trees being planted in front of the building will be approved by the City of Portland arborist.

IV. Construction Management Plan

- A representative of Turner construction provided some background on Turner construction, an overview of the project timeline, and logistics required to complete the project. The project is anticipated to be 36 months in duration.
- The topic of property surveys was discussed: Turner does not anticipate vibrations from construction activities to impact the adjacent properties. In order to ensure that adjacent properties are not impacted, vibrations monitoring devices will be placed around the construction site and building foundations will be installed using a screw-auger rather than an impact hammer. No blasting will occur during this project.
- City of Portland allows construction crews to work between 7:00AM – 7:00PM on weekdays. Turner will work within these times but anticipates the occasional weekend work will need to be completed.
- One resident had questions regarding MMC's future development plans, after Phase III. Response was that this is it for foreseeable future for this campus, but that additional floors to new Congress Street Building would be next logical expansion area.

V. Traffic

- MMC outlined the methods used to develop to complete the traffic analysis and shared the results of the analysis.

- MMC does not anticipate a significant increase in overall traffic as a result of the project. Traffic volumes will be redistributed from the MMC parking garage to the future St John St. garage and Bramhall St entrance to the future Congress St entrance.

VI. Communications

- For more information and on-going updates, anyone can visit MMC's website to sign up for email and text alerts: www.mmc.org/modernization.

For construction related issues, there are contact numbers on the MMC Modernization website, as well as on the City's website.

Link to project:
https://mainehealth.org/maine-medical-center/newsroom/modernization

M

WRITTEN SUBMISSION 12 – SIDEWALKS
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THE PROJECT WILL INCLUDE NEW SIDEWALKS INCLUDING PUBLIC SIDEWALKS ALONG CONGRESS STREET AND GILMAN STREET. IN ACCORADNCE WITH THE IDP, THESE WILL BE BRROM FINISH CONCERTE SURFACES. TACTILE WARNING SURFACES AT CROSSWALK LOCATIONS ARE DESIGNED TO COMPLY WITH THE CITY TECHNICAL MANUAL, SECTION 1.

MM

Maine Medical Center
MaineHealth

Congress St Patient Tower

City of Portland Planning Board

Tuesday October 23, 2018

PATIENT CENTERED · RESPECT · INTEGRITY · EXCELLENCE · OWNERSHIP · INNOVATION

Contents

- How we got here
- Site plan I,II,III overview
- Construction progress to date
- Overview of Site Plan III
- Design
- Construction
- Ongoing communications
- Closing



A Typical Day at the Medical Center

Gassed Beds	
Total Beds:	637
Patient condition closures:	44
Construction closures:	4
Staffing closures:	13
Open beds:	576
Held for assigned admits:	7
Census at 0700:	553
Beds remaining:	16

Available Beds	
Medical/Surgical:	0
Cardiac:	4
Intermediate Care:	0
Intensive Care:	4
Psychiatric:	1
Childrens:	12
Obstetrics:	21
Beds remaining:	42

Patients Waiting for a Bed	
In the ED:	17
In the ED waiting for P6 (exculdes outside psych placement):	0
In the PACU:	2
Transfer from other facilities:	4
Total:	**23**

Expected Admissions	
ED admits:	45 - 55
Procedural admits:	45 - 50
Cath Lab admits:	1 - 4
Outisde admits:	10 - 15
Total:	**101 - 124**



Building History



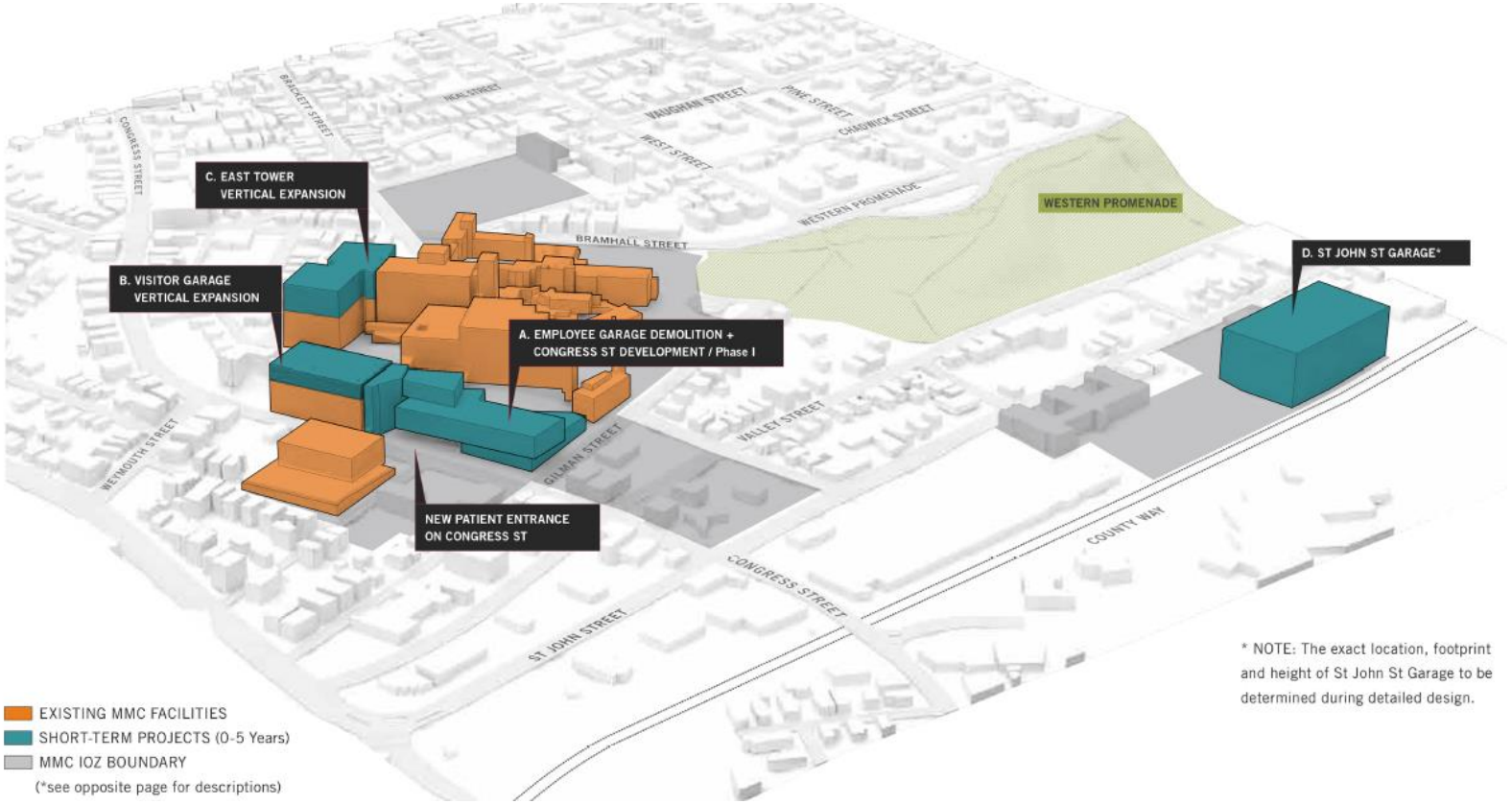
Institutional Development Plan (IDP) & Regulatory Framework

- MMC's Master Planning document recently approved by the Planning Board includes:
  - Maine Medical Center Master Facility Plan (MFP)
  - Transportation Plan
  - Environment & Infrastructure Plan
  - Design
  - Neighborhood Engagement

- The Regulatory Framework was approved by the City Council and includes:
  - Revised Boundary
  - Maximum Heights
  - Snow Ban Parking
  - Neighborhood Integration
  - Healthy Communities



Master Facility Plan

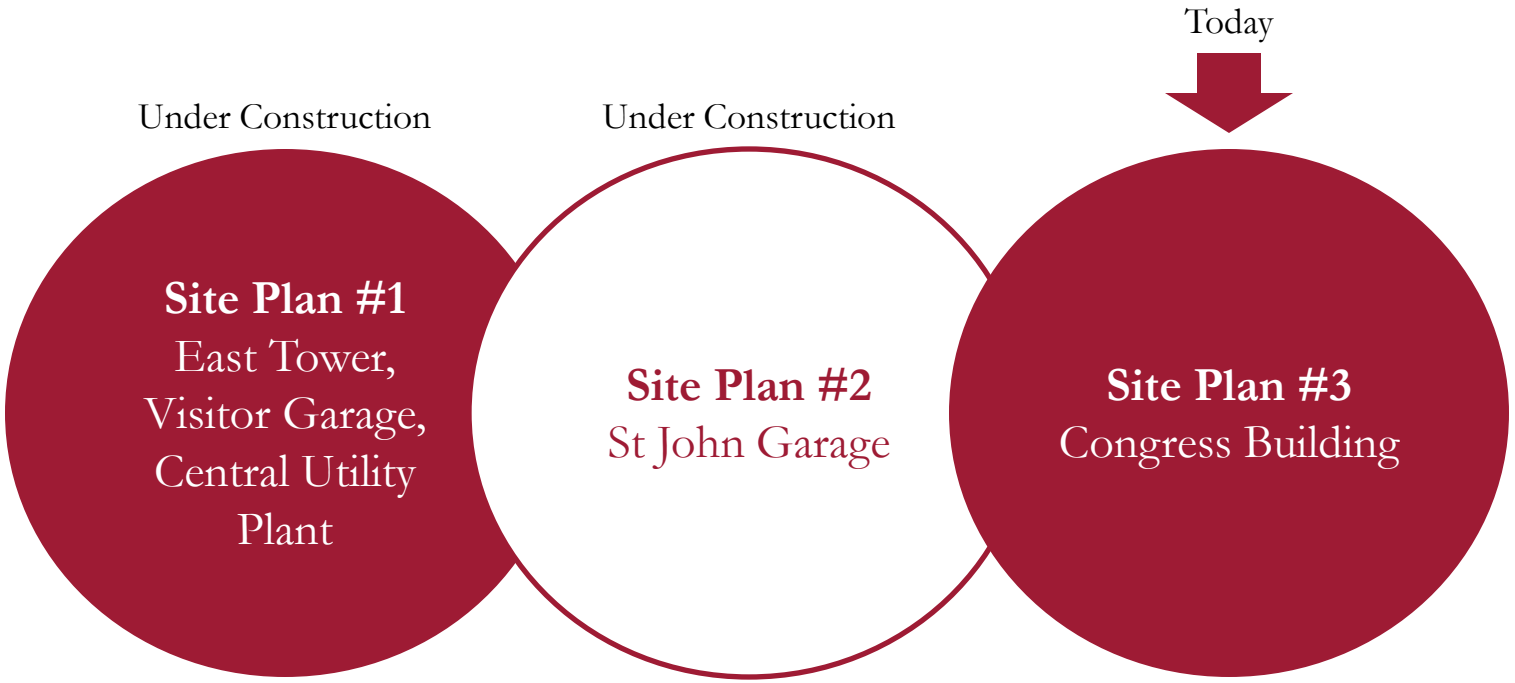


Act with kindness and compassion. | Be an active listener. | Be a role model. | Set high standards. | Take responsibility. | Embrace change.

Jeff Sanders,
Executive Vice President and COO,
MMC

Maine Medical Center
MaineHealth

MMC MFP Site Plan Review



- Three separate applications with overlapping schedules
- Intended to make the materials digestible and to provide more opportunities for feedback from the City and Neighbors

Act with kindness and compassion. Be an active listener. Be a role model. Set high standards. Take responsibility. Embrace change.

Congress St Patient Tower



Design

Jeff Keilman, Senior Project Manager, Senior Associate
Perkins + Will

Be a role model. Take responsibility. Set high standards.
Embrace change. Be an active listener.
Act with kindness and compassion.

Design Guidelines

Guideline	Summary	Status
1	Contribute to campus vision	✓
2	Consideration for a cohesive identity from afar	✓
3	Entrances oriented towards public rights-of-way	✓
4	Compatible with existing or planned character	✓
5	High quality materials	✓
6	Design to consider long-views	✓
7	Vibrant, contributing and sustainable ground floor	✓
8	Limited blank facades	✓
9	Screened parking	n/a





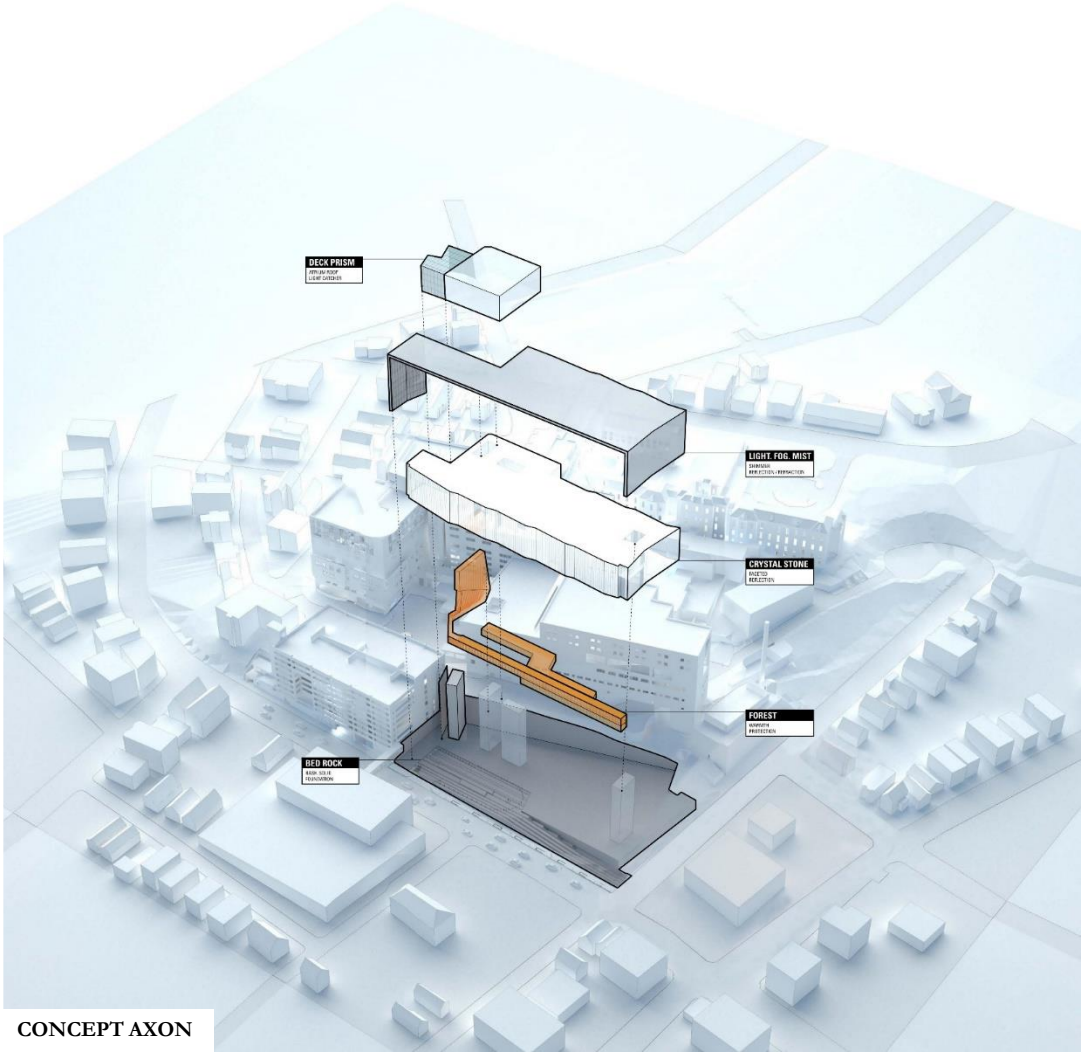
ROCK WALL



FOREST



BED ROCK



CONCEPT AXON

Act with kindness and compassion.

Be an active listener.

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Set high standards.

Take responsibility.

Embrace change.

Design Concept

Jeff Keilman,
Senior Project Manager,
Perkins+Will

Maine Medical Center
MaineHealth

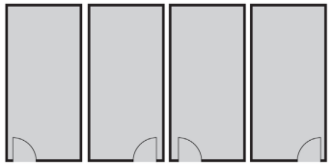
Planning Drivers

PATIENT ROOM PLANNING GOALS

- INCREASE VISIBILITY AND MAXIMIZE PATIENT OBSERVATION
- MINIMIZE WALKING DISTANCES
- CREATE CENTRALIZED INTERPROFESSIONAL COLLABORATION

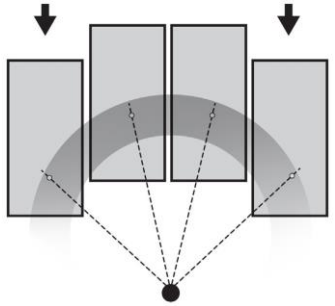
TRADITIONAL PATIENT ROOMS

- TRADITIONAL LINEAL PATIENT ROOM ARRANGEMENT



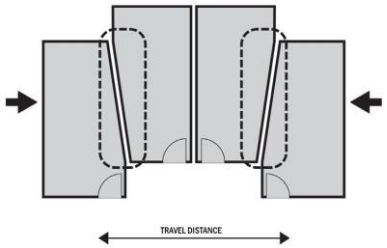
MODIFIED PATIENT ROOMS

- INCREASE STAFF VISIBILITY TO PATIENT
- IMPROVE PATIENT VIEWS OUT
- CENTRALIZE STAFF



NESTED PATIENT ROOMS

- REDUCE TRAVEL DISTANCE
- DECREASES THE OVERALL LENGTH OF THE BED FLOOR BAR / PERIMETER
- FURTHER IMPROVE STAFF VISIBILITY TO PATIENT



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Planning Drivers

PATIENT ROOM PLANNING : SOLAR ORIENTATION

- ALIGN BUILDING EXTERIOR AND FAÇADE TO REFLECT INTERNAL PLANNING STRATEGIES
- MAXIMIZE PATIENT VIEWS AND COMFORT BY REDUCING INCIDENTS OF DIRECT SUN AND GLARE



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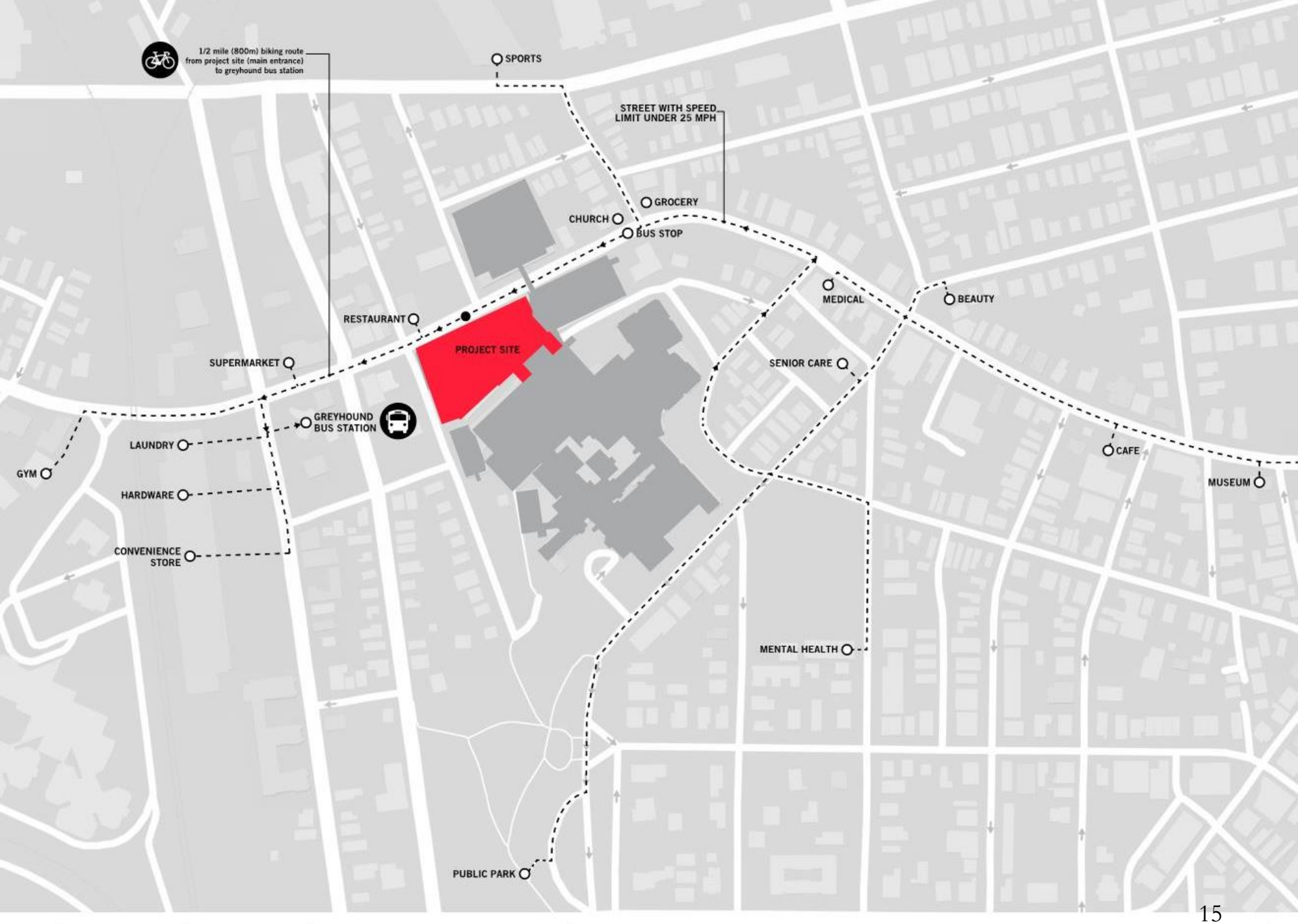
Planning Drivers



Jeff Keilman,
Senior Project Manager,
Perkins+Will


1/2 mile (800m) biking route from project site (main entrance) to greyhound bus station
SPORTS
STREET WITH SPEED LIMIT UNDER 25 MPH
GROCERY
CHURCH
BUS STOP
MEDICAL
BEAUTY
RESTAURANT
PROJECT SITE
SUPERMARKET
SENIOR CARE
GREYHOUND BUS STATION
LAUNDRY
CAFE
GYM
MUSEUM
HARDWARE
CONVENIENCE STORE
MENTAL HEALTH
PUBLIC PARK
SCALE:
1/16 mile (100m)
1/8 mile (200m)
1/4 mile (400m)
N



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Jeff Keilman,
Senior Project Manager,
Perkins+Will

Maine Medical Center
MaineHealth



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Senior Project Manager,
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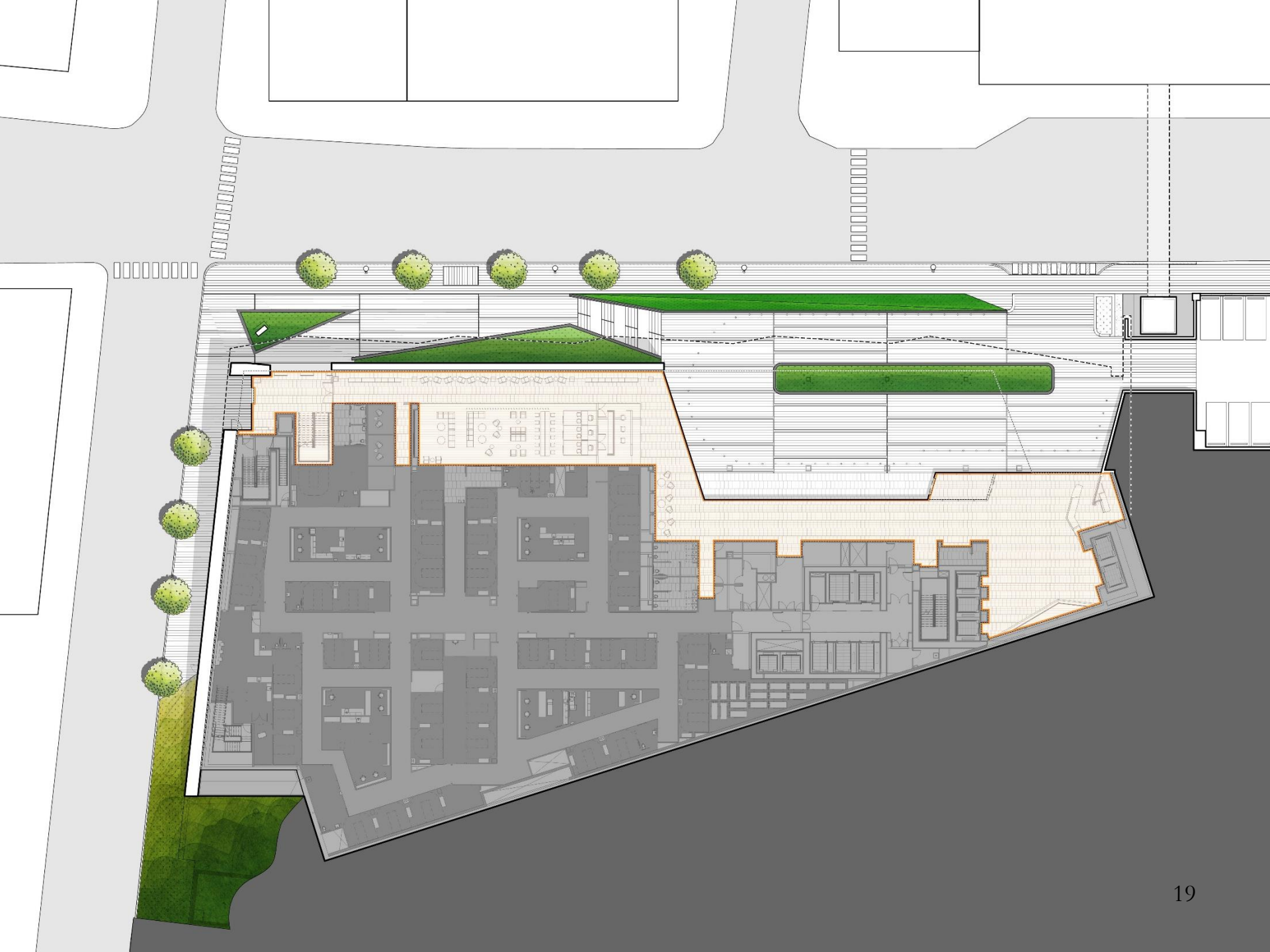
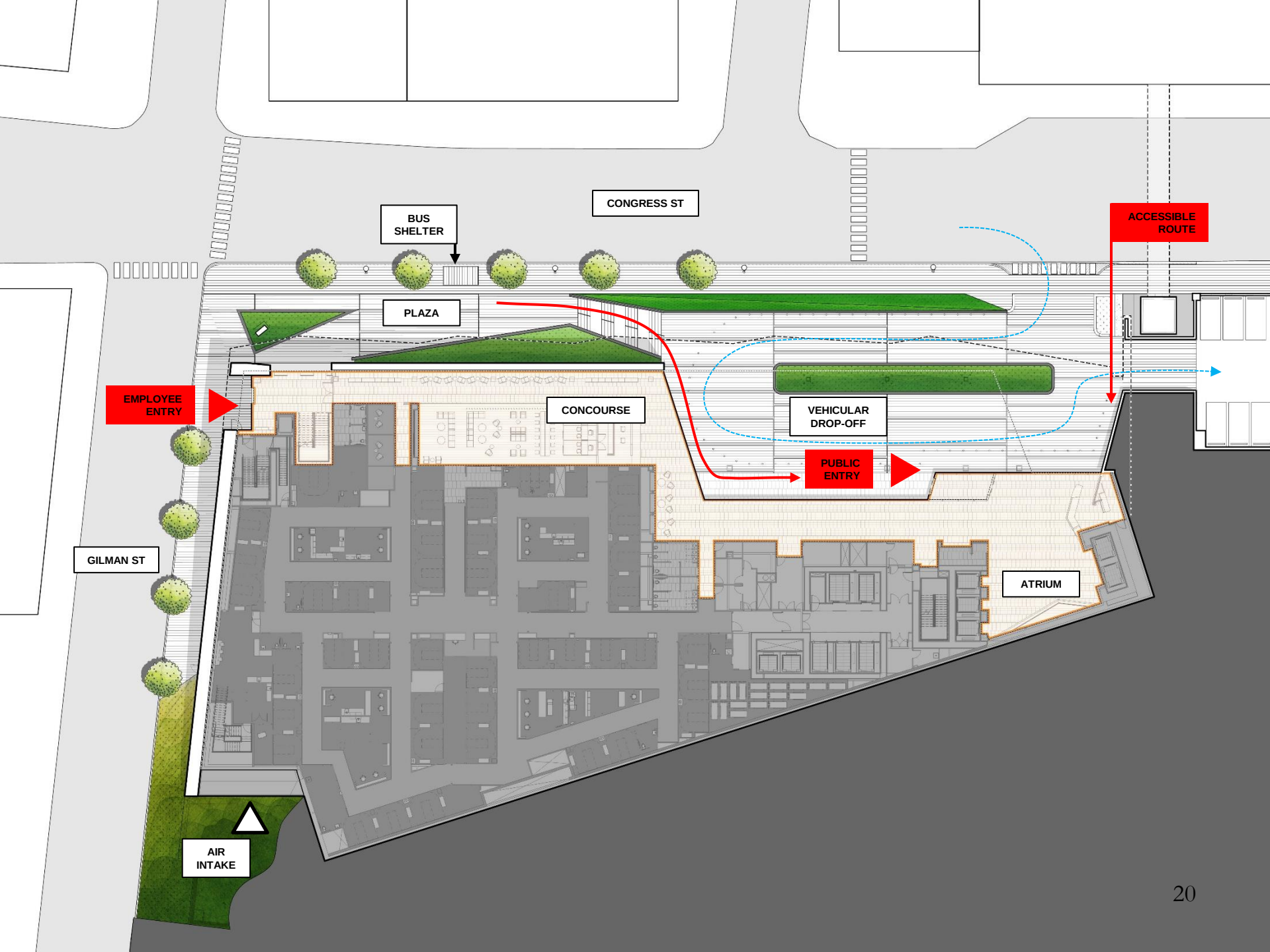
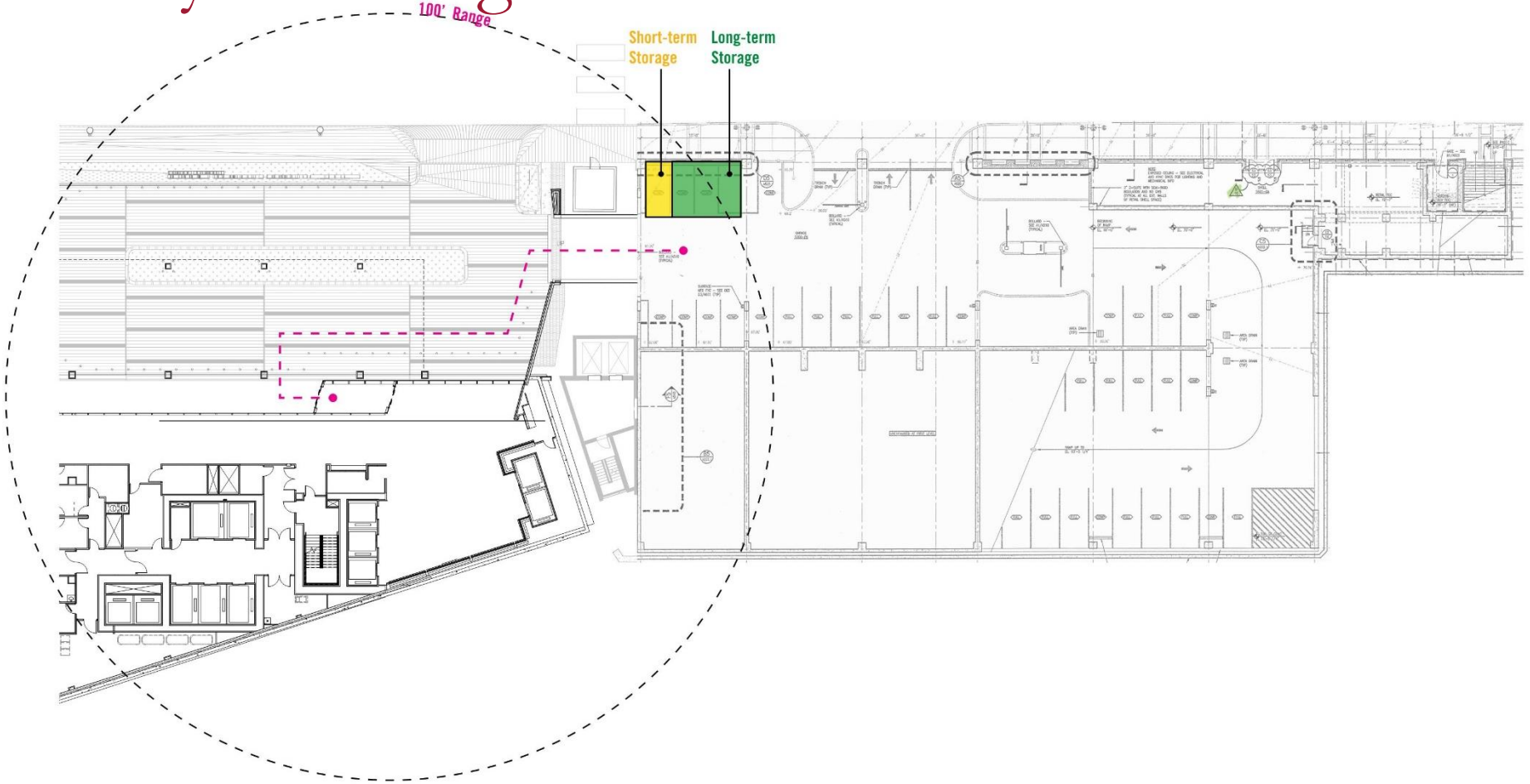
Maine Medical Center
MaineHealth






CONGRESS ST
BUS SHELTER
ACCESSIBLE ROUTE
PLAZA
EMPLOYEE ENTRY
CONCOURSE
VEHICULAR DROP-OFF
PUBLIC ENTRY
GILMAN ST
ATRIUM
AIR INTAKE

Bicycle Storage



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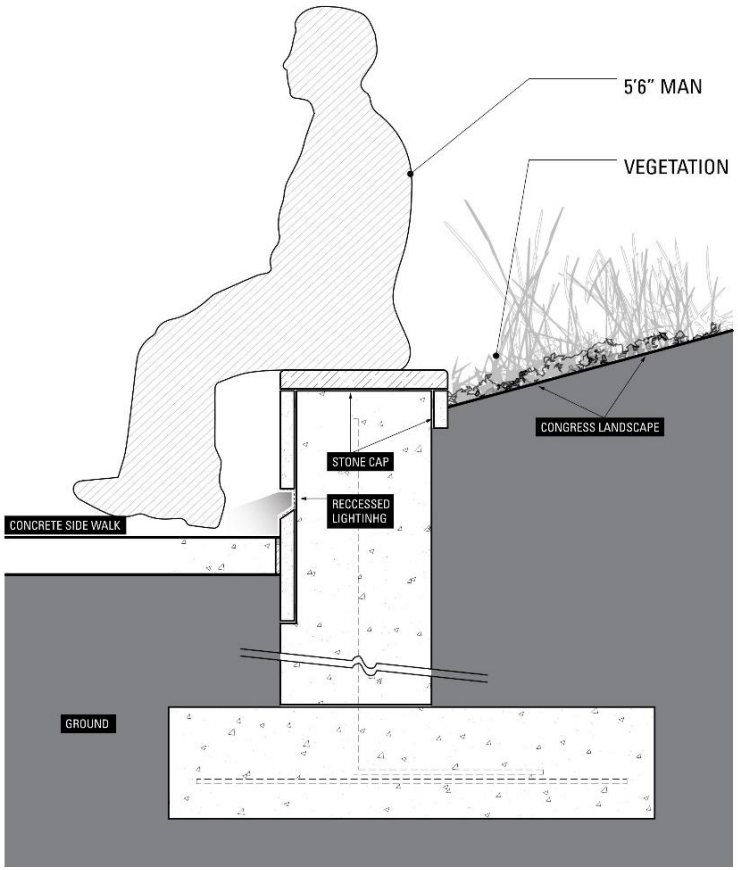
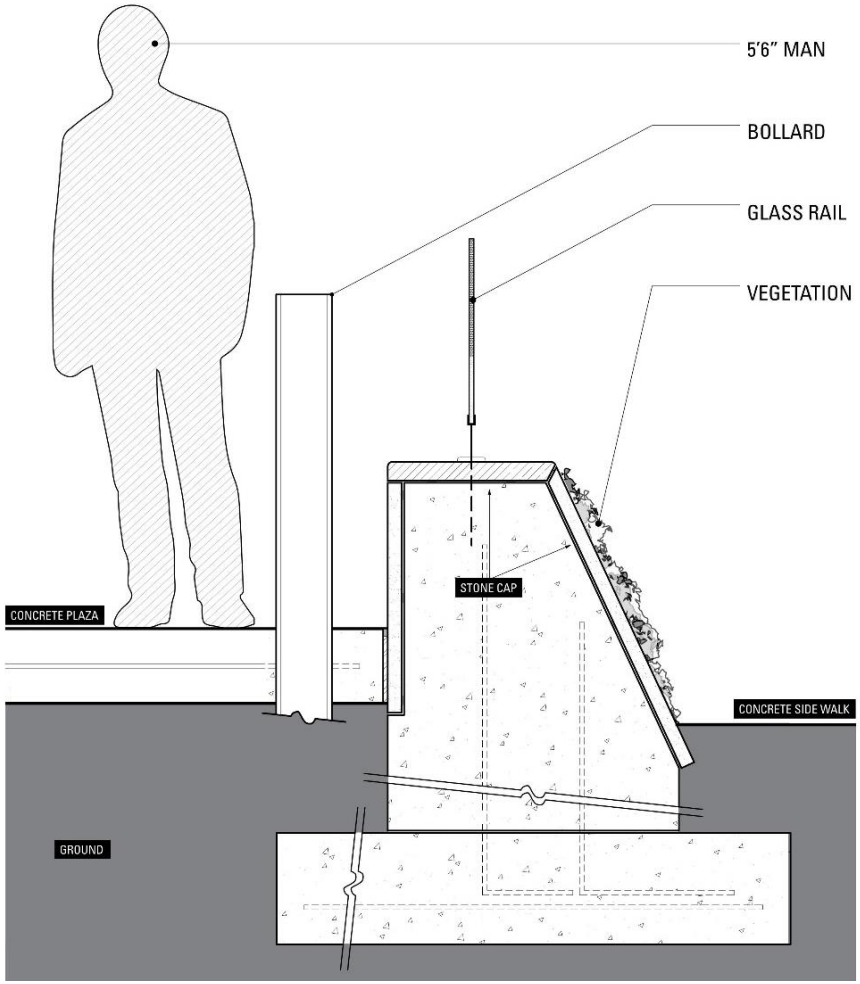
Jeff Keilman,
Senior Project Manager,
Perkins+Will

Site Design





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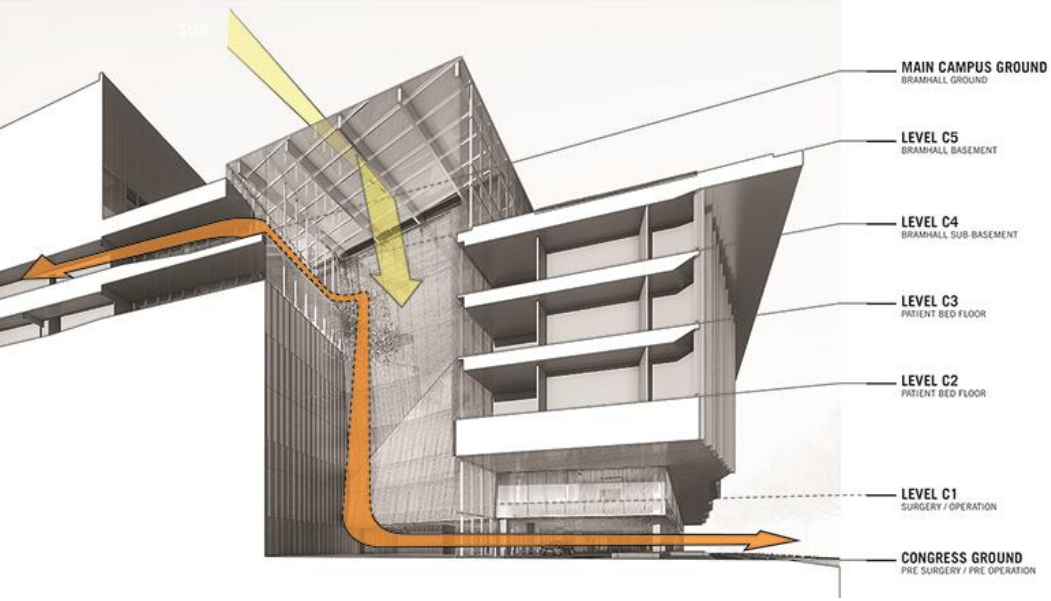



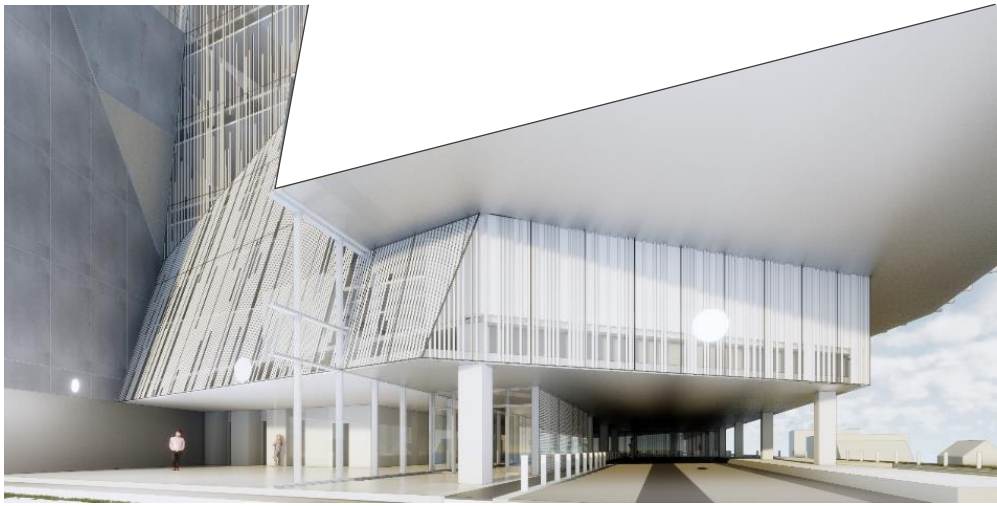

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Jeff Keilman,
Senior Project Manager,
Perkins+Will

Maine Medical Center
MaineHealth

1. **POINT CITY**
by introducing new transportation points, MMC strengthens pedestrian walk-ability and public circulation - bus stop is located at the front of building.

2. **BIKE STORAGE**
outdoor and indoor bike storage available on site.

3. **HIGH PERFORMANCE ENVELOPE**
well insulated exterior glazings help to prevent heat transfer and reduce heat loss.

4. **CONGRESS GROUND FLOOR GLAZING**
transparent glazing allows for natural daylighting to luminate concourse.

5. **PV-READY ROOF**
roof structure allows for addition of PV-Panels, cut building energy usage and provide roof shading.

6. **EFFICIENT LED LIGHTING**
energy efficient, long lasting fixtures.

7. **LOW FLOW PLUMBING FIXTURES**
reduce water usage and conserve water.

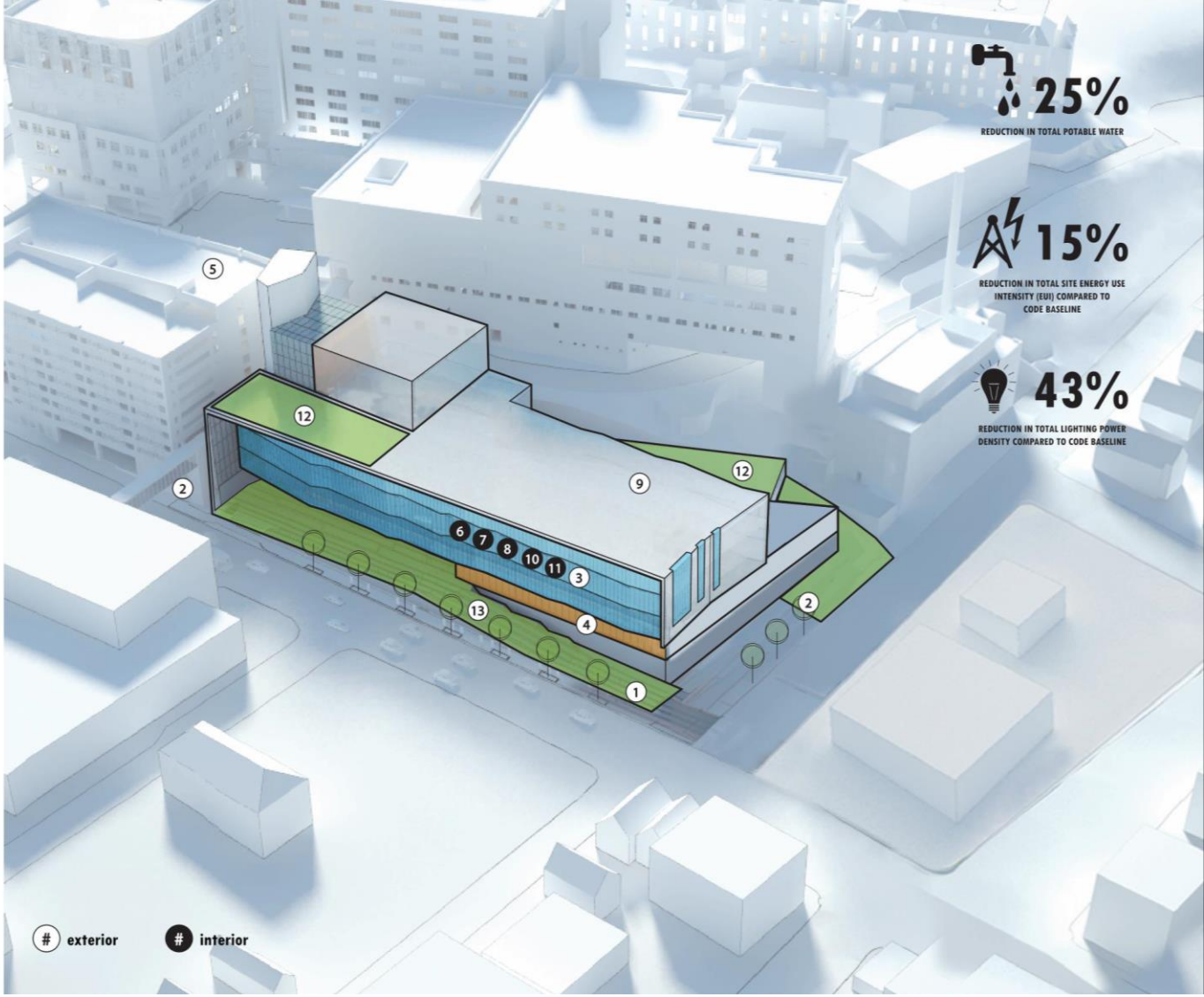
8. **EFFICIENT SYSTEMS**
use less energy to heat and cool the building.

9. **WHITE ROOF MEMBRANE**
helps to reduce heat island effect.

10. **HEALTHY MATERIALS**
improve indoor air quality and reduce exposure to harsh chemicals in materials.

11. **RECYCLING ALCOVE**
staffs have easy access to sustainable waste management.

12. **ROOF GARDENS/ IMPERVIOUS SURFACE**
decrease rate of flow into sewer, reduce storm water runoff, and improve thermo insulation.



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Embrace change.

Jeff Keilman,
Senior Project Manager,
Perkins+Will

Maine Medical Center
MaineHealth

Construction Management Plan

Richard Parsons, Construction Executive,
Turner

Be a role model. Take responsibility. Set high standards.
Embrace change. Be an active listener.
Act with kindness and compassion.

Construction Approach & Challenges

- Minimize impacts to surrounding area
- Open and transparent communications
- Maintain hospital operations
- Safety

Turner

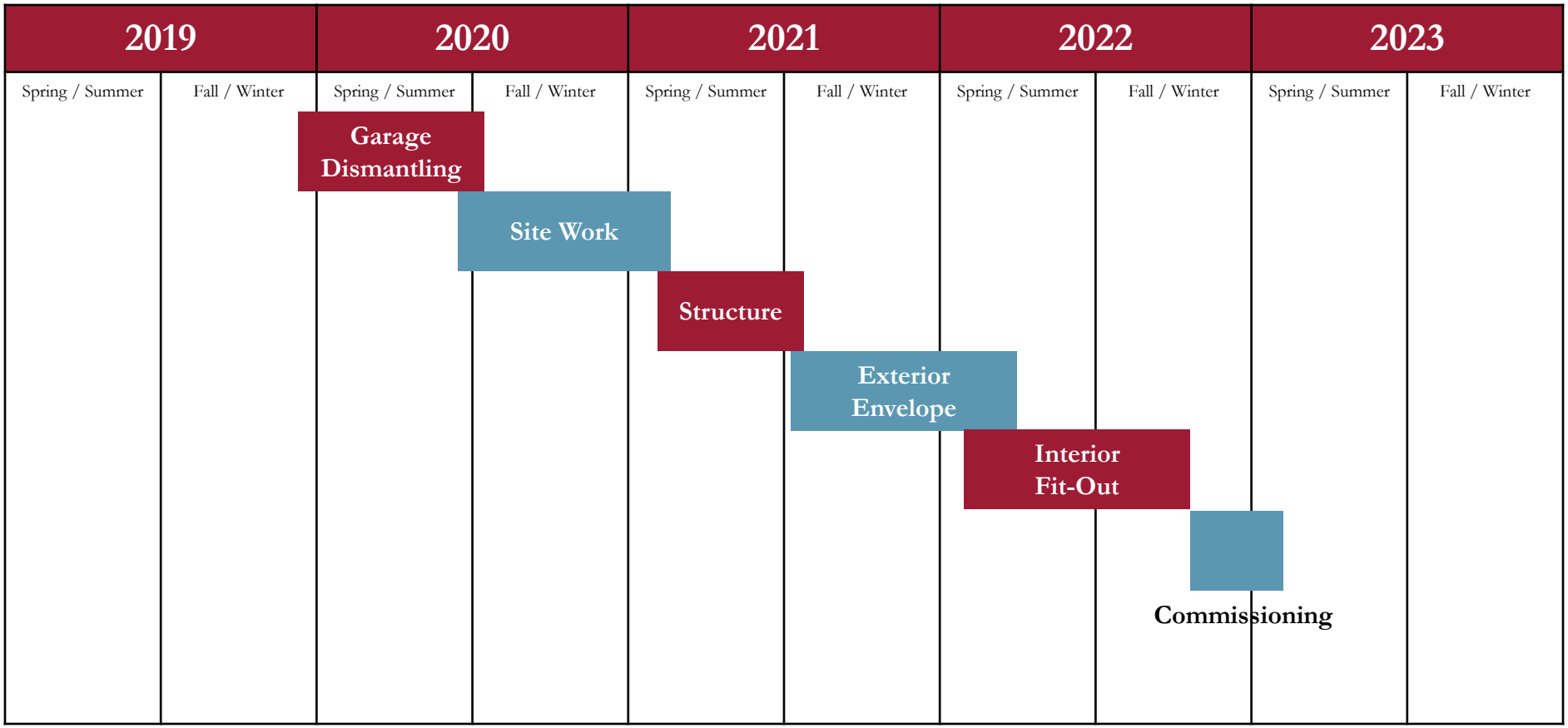


Contractor Parking

- Offsite Parking area will be available for workers
- Construction worker parking on MMC grounds and on adjacent streets will be prohibited
- Construction Manager personnel will monitor daily
- Language to be included in all subcontracts with offsite parking requirements and penalties for non-compliance



Construction Timeline



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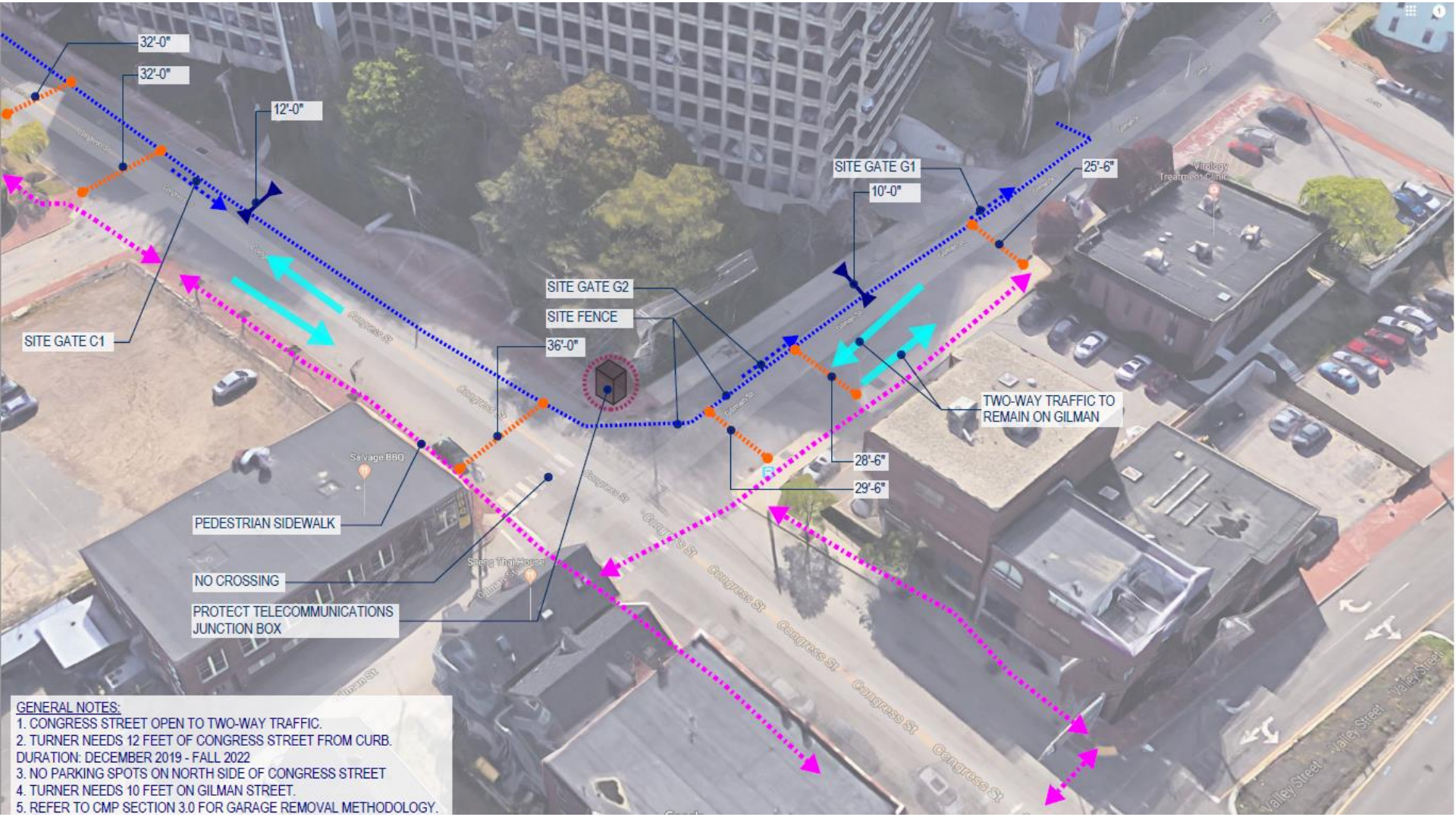
Dick Parsons,
Construction Executive,
Turner

Maine Medical Center
MaineHealth



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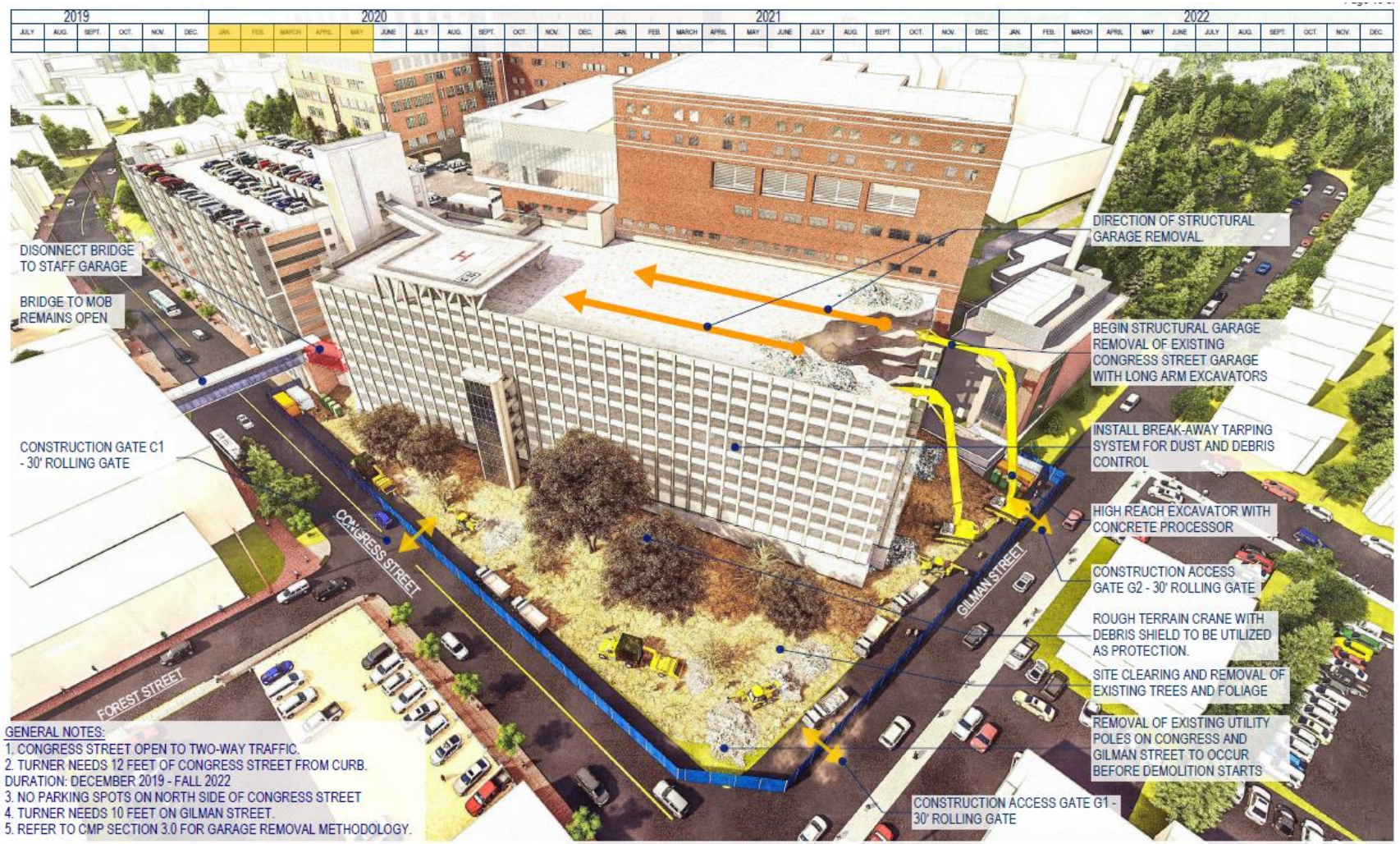
Pedestrian Routes

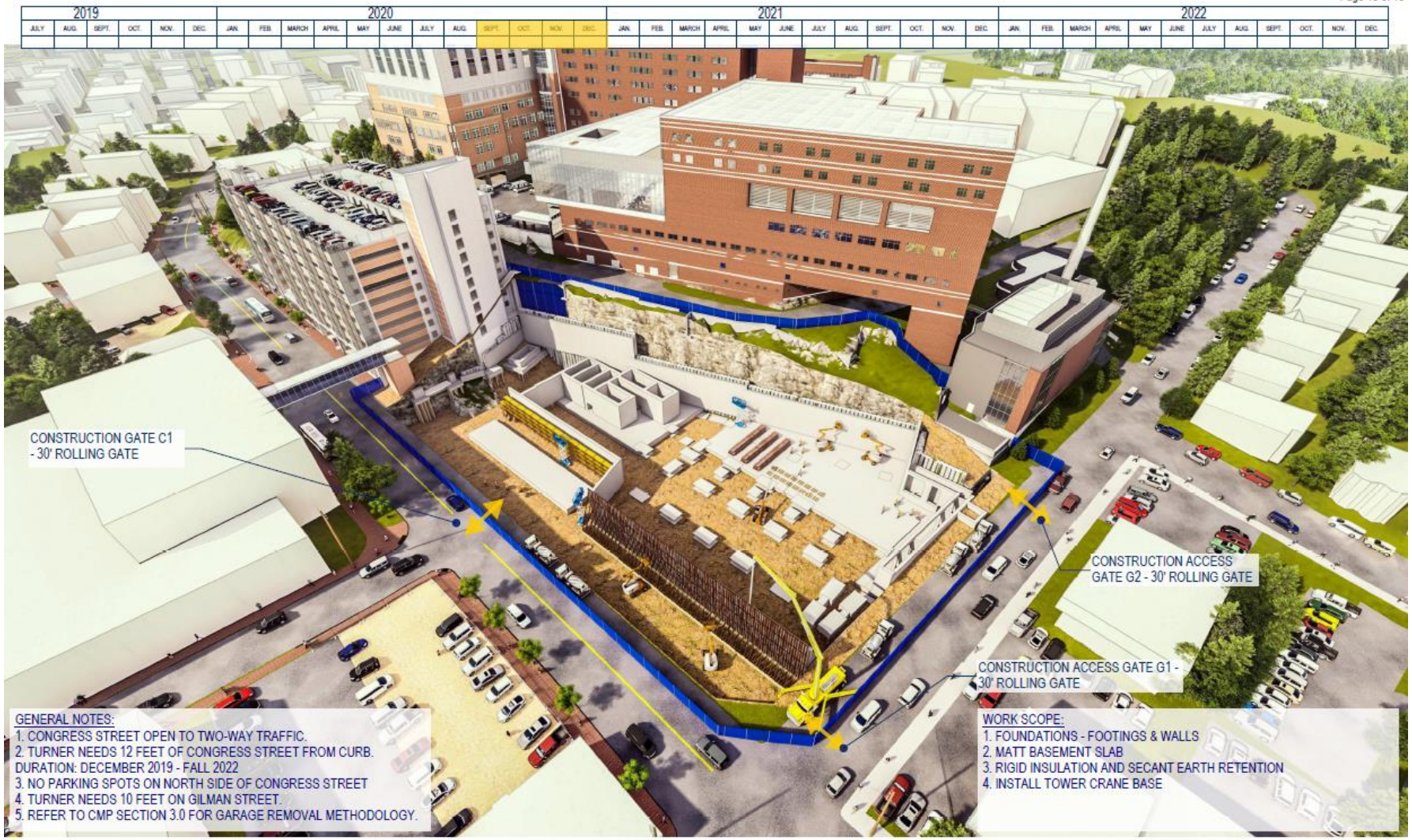


CONGRESS STREET NEW CLINICAL TOWER
Additions and Renovations [Structural Garage Removal Logistics Plan]

Turner

Act with kindness and compassion. | Be an active listener. | Be a role model. | Set high standards. | Take responsibility. | Embrace change.

Garage Dismantling



CONGRESS STREET NEW CLINICAL TOWER
Construction Management Plan [Logistics Plan] - Foundations

Turner

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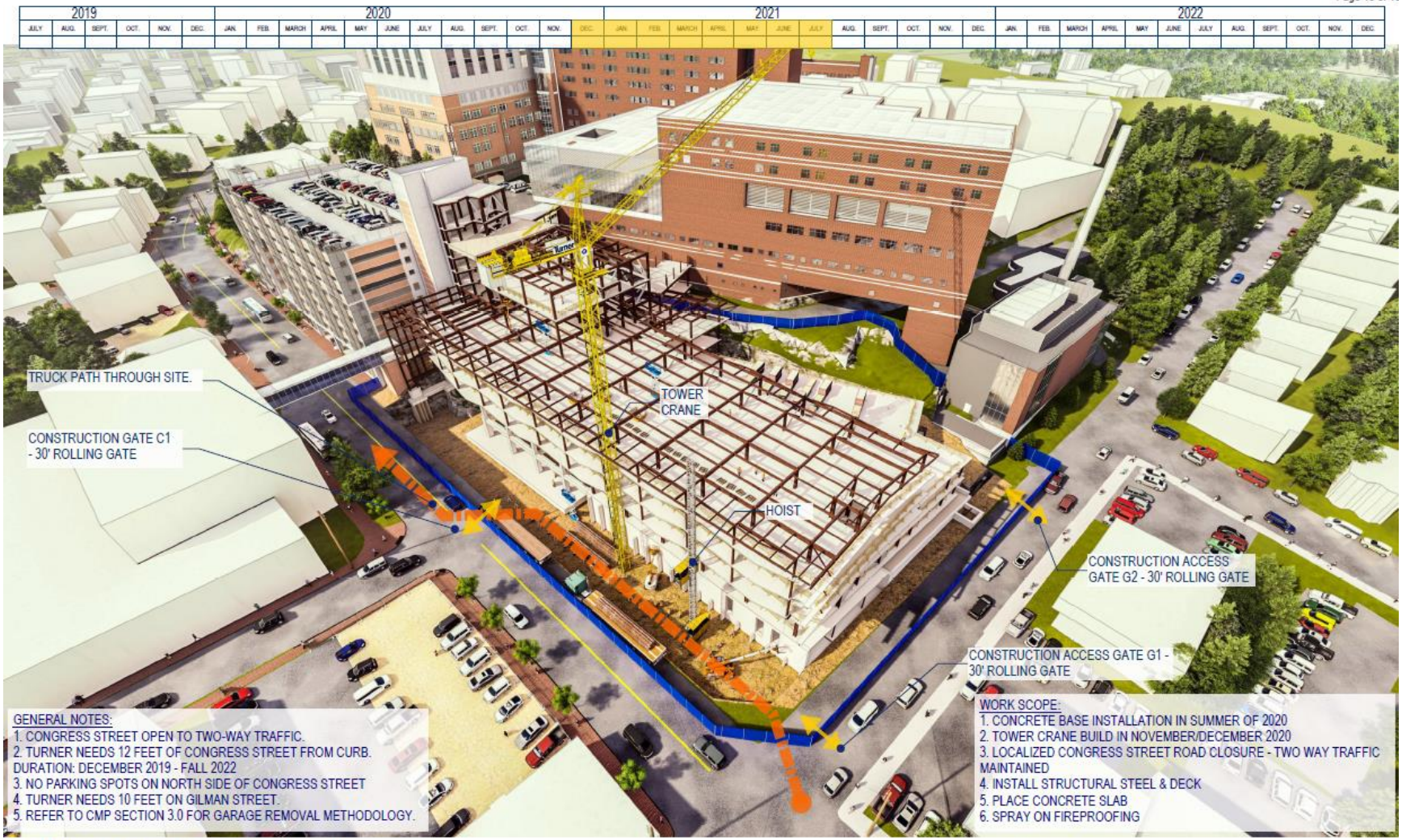
Site Work



CONGRESS STREET NEW CLINICAL TOWER
Construction Management Plan [Logistics Plan] - Structure

Turner

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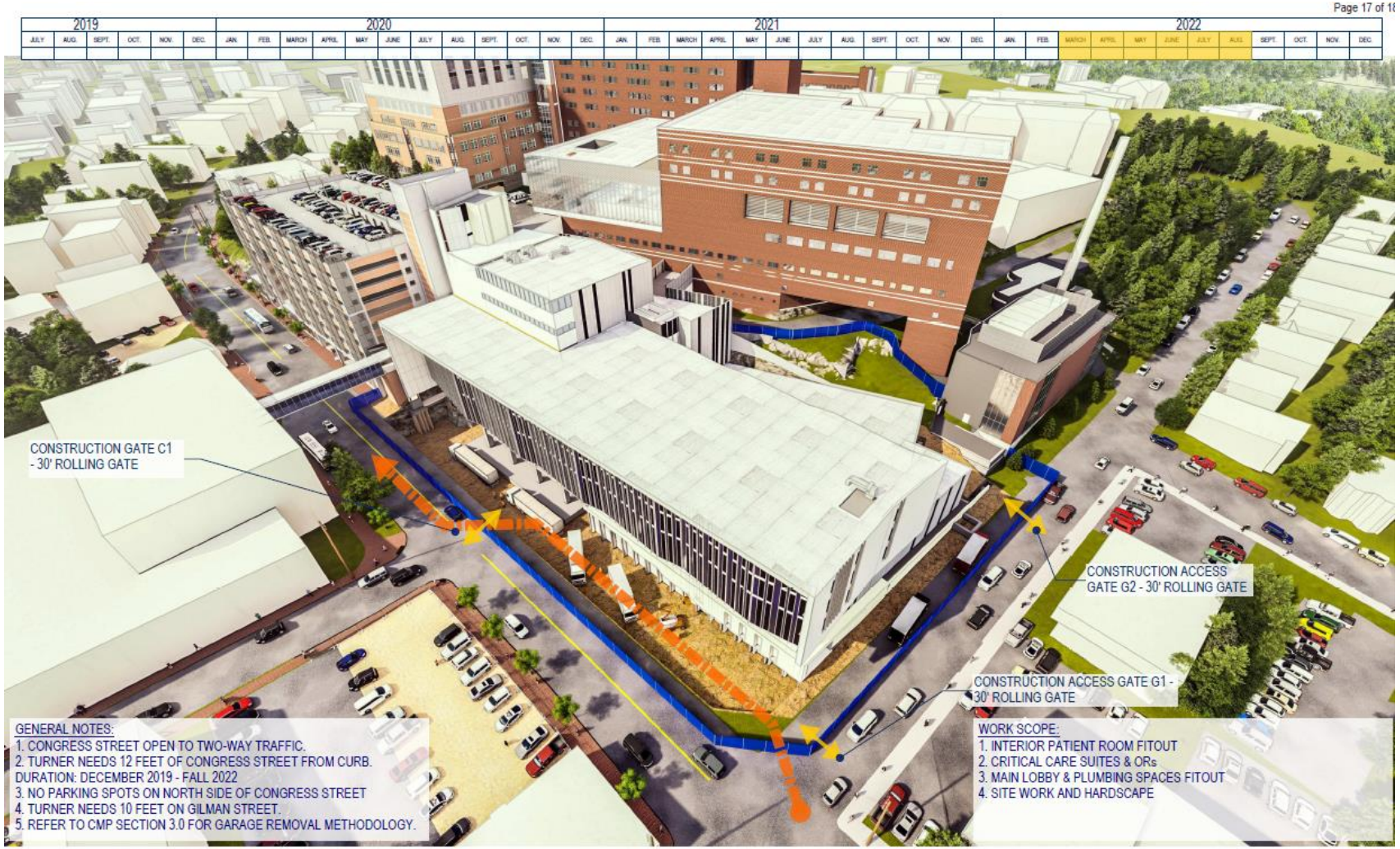
Building the Structure

Dick Parsons,
Construction Executive,
Turner

Maine Medical Center
MaineHealth



CONGRESS STREET NEW CLINICAL TOWER
Construction Management Plan [Logistics Plan] - Interior Fitout

Turner

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Dick Parsons,
Construction Executive,
Turner

Exterior Envelope & Interior Fit-Out

Maine Medical Center
MaineHealth



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Be an active listener.

Be a role model.

Set high standards.

Take responsibility.

Embrace change.

Dick Parsons,
Construction Executive,
Turner

Commissioning and Completion

Maine Medical Center
MaineHealth

Ongoing Communications

Jeff Sanders, Executive Vice President, Chief Operating Officer
Maine Medical Center

Be a role model. Take responsibility. Set high standards.
Embrace change. Be an active listener.
Act with kindness and compassion.

Communications

- For more information and on-going updates, anyone can visit MMC's website to sign up for email and text alerts: www.mmc.org/modernization



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MMC Campus Modernization Project

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MMC Campus Replacement & Modernization Project

Maine Medical Center is excited to begin work on the largest modernization and replacement project in its history – a patient-focused initiative that will enable the state's largest hospital to meet the most urgent healthcare needs well into the future.

Altogether, the $525 million project will create 128 new private patient rooms, add 19 procedure rooms for surgeries and other complex treatments, provide an additional 225 spaces for patient and visitor parking, and consolidate MMC employee parking into one nearby garage that will meet current demand and future growth. The project will also open Maine Medical



Act with kindness and compassion. | Be an active listener. | Be a role model. | Set high standards. | Take responsibility. | Embrace change.

Jeff Sanders,
Executive Vice President and COO,
MMC

Maine Medical Center
MaineHealth

Thank You

Be a role model. Take responsibility. Set high standards.
Embrace change. Be an active listener.
Act with kindness and compassion.

WRITTEN SUBMISSION 13 – PUBLIC TRANSIT
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THE APPLICANT HAS MET WITH REPRESENTATIVES FROM METRO ON SEVERAL OCCASIONS, AND THE SITE PLAN INCLUDES A PROPOSED LOCATION FOR A NEW METRO STOP, IN FRONT OF THE NEW BUILDING ON CONGRESS STREET. THE SITE PLAN ALSO INCLUDES A NEW CROSS WALK NEAR FOREST STREET. THE APPLICANT WILL CONTINUE TO MEET WITH METRO UNTIL THESE LOCATIONS ARE FINALIZED.

Maine Medical Center
MaineHealth

NN

Pedestrian Network Plan



The safety and security of pedestrians in and around its campus is of utmost importance to Maine Medical Center.

MMC's Campus Replacement and Modernization Project will transform the pedestrian experience of the campus along Congress Street. It will provide safe connections between Congress Street and neighborhood streets to the south of the Hospital.

Figure 1

Introduction: MMC Institutional Overlay Zone

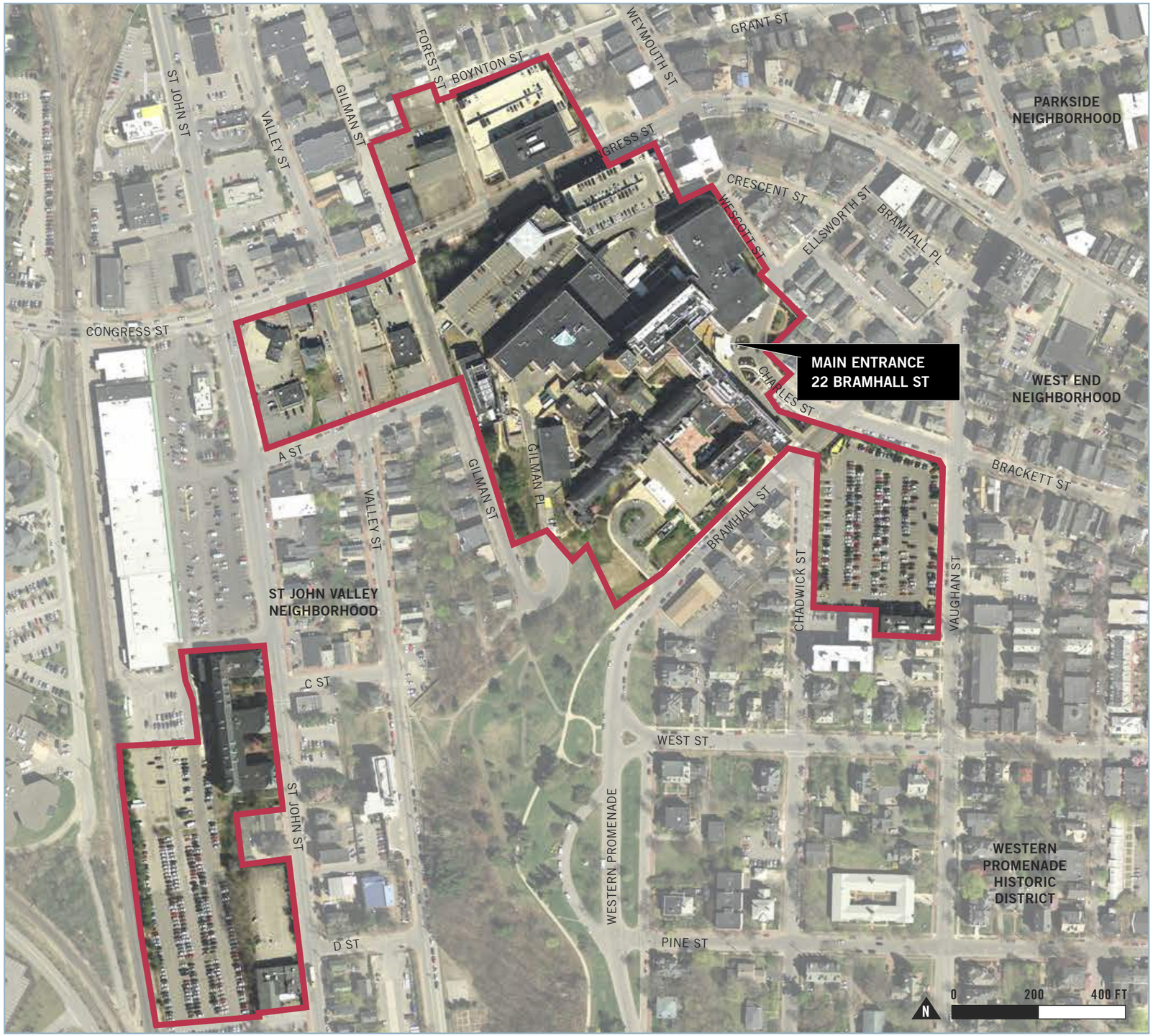
Maine Medical Center (MMC) is a complete health care resource for the people of greater Portland, the entire state of Maine, and northern New England. MMC is the state's largest medical center, licensed for 637 beds and employing more than 6,000 people.

On November 20, 2017, Portland City Council voted to approve MMC's application for a zoning amendment, creating the **MMC Institutional Overlay Zone (IOZ)** for the boundary shown at right. The regulatory framework for the IOZ, which was created with input from neighbors, City planning staff, and the general public, will enable MMC to modernize and expand its Bramhall St campus in harmony with surrounding neighborhoods and the Congress Street corridor.

Portland City Council subsequently approved the **MMC East Tower and Visitor Garage Vertical Expansion Project**. The Standard Conditions for the approval dated March 29, 2018 include the following requirement:

"*[…] the applicant shall develop a long term public Pedestrian Network Plan (both on and off the ROW) showing the integration of the upper level MMC campus with the Congress Street corridor, including measures to address CPTED principles, for implementation when the retail space beneath the Visitors Garage is available for lease or sale; such plan to be submitted for review and approval by the Planning Authority prior to the issuance of a building permit for the Congress Street Hospital Entrance;*"

This document was prepared for MMC by Perkins+Will with input from the City of Portland Planning Department to meet the Pedestrian Network Plan requirement cited above. It complements MMC's Institutional Development Plan (IDP), which was approved by the City of Portland Planning Board on September 26, 2017 and is available on the MMC website.



MMC INSTITUTIONAL OVERLAY ZONE (IOZ)

MMC Institutional Overlay Zone Boundary

Figure 2

Evolution of the MMC Bramhall Campus

MMC Bramhall campus occupies a steep hill that rises about 100 feet from Congress Street, Portland's main street, to Bramhall Street. It is nestled in Portland's historic urban fabric and a robust sidewalk network that connects the campus to its surroundings.

The original hospital building was sited facing the Western Promenade and the then emerging residential neighborhood abutting the park. The campus has maintained this orientation in its evolution into the state's largest medical center.

Since the 2000s, he campus has a main drop-off and pedestrian entrance at 22 Bramhall St that connects to Portland's robust network of public sidewalks. The sidewalk network connects pedestrians to multiple transit stops located within walking distance of the campus. A series of public corridors take patients and visitors from the main entrance to all clinical destinations on campus. Campus amenities such as the Impressions Cafe, the Pharmacy and the Gift Shop are also located along the public corridors (see "Figure 2" on page 4).

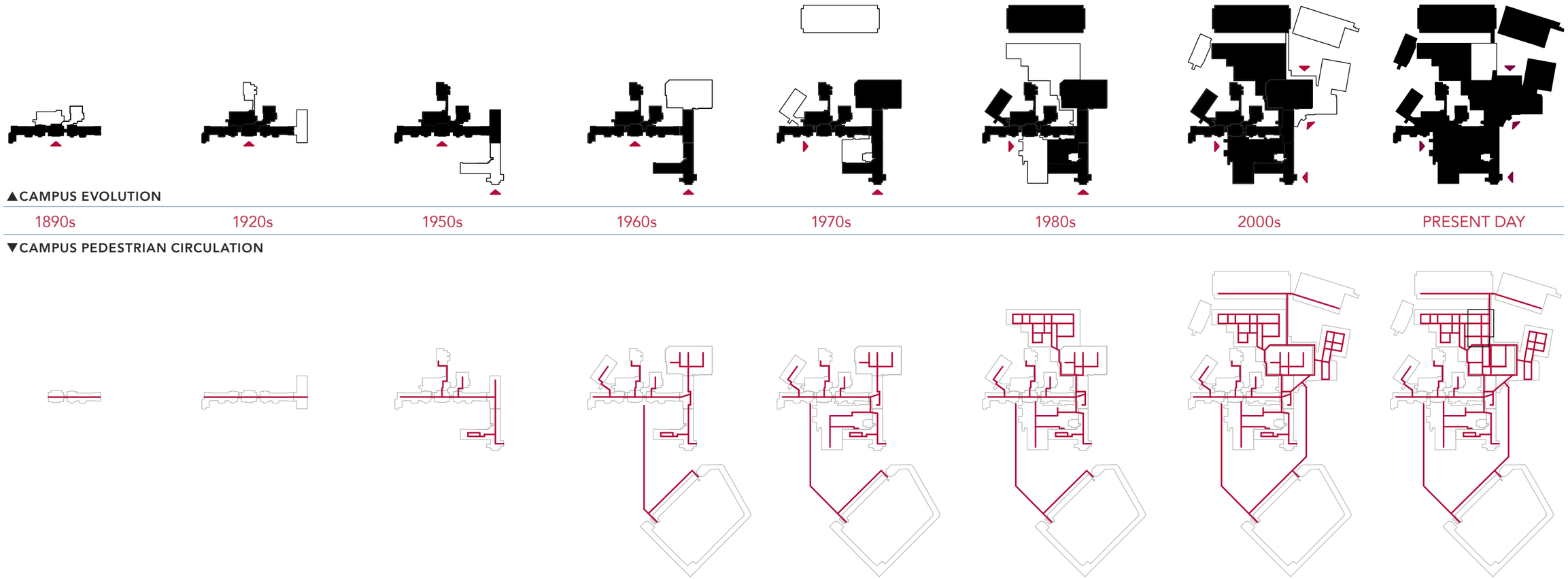
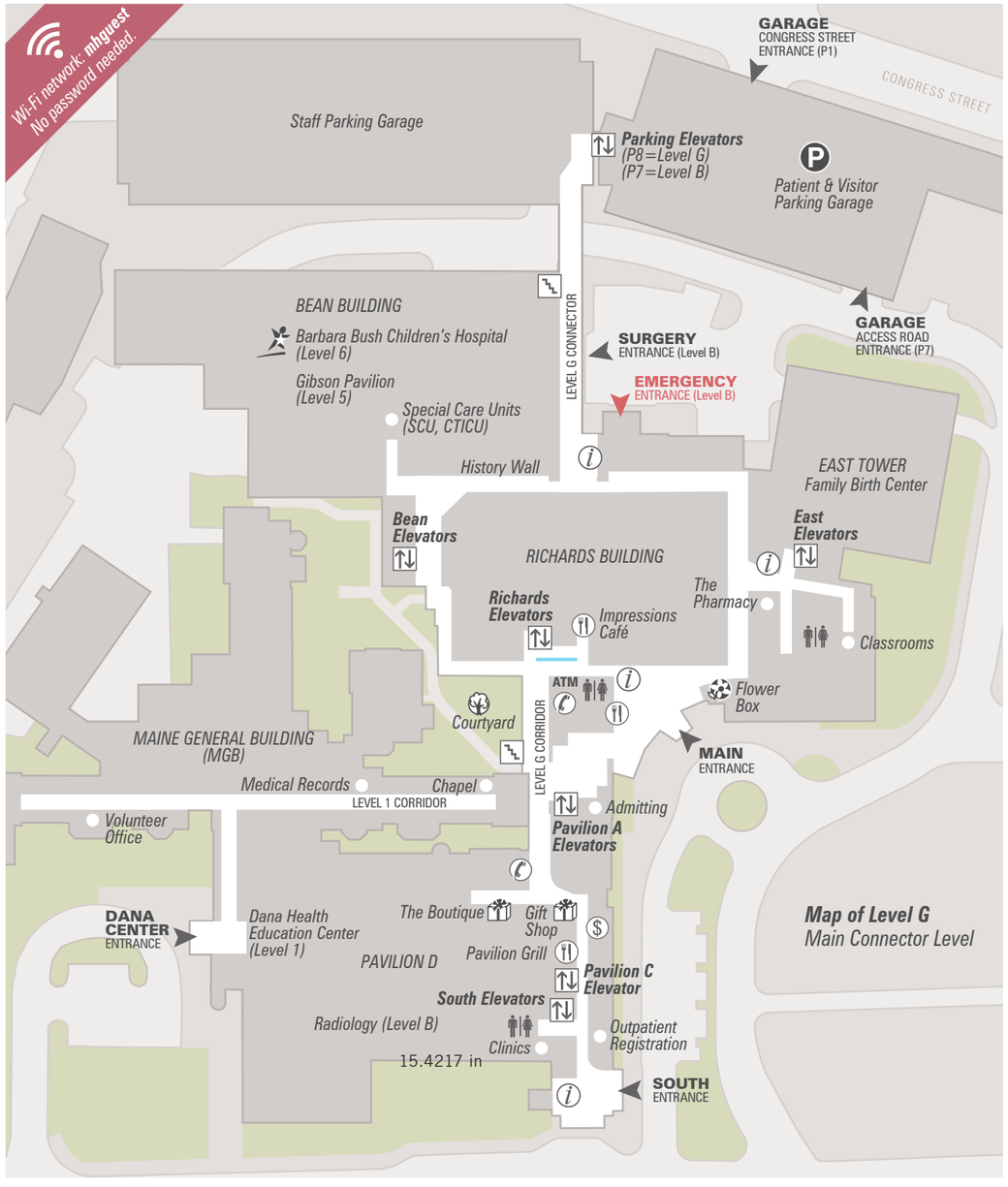


Figure 3

MMC Campus Pedestrian Circulation

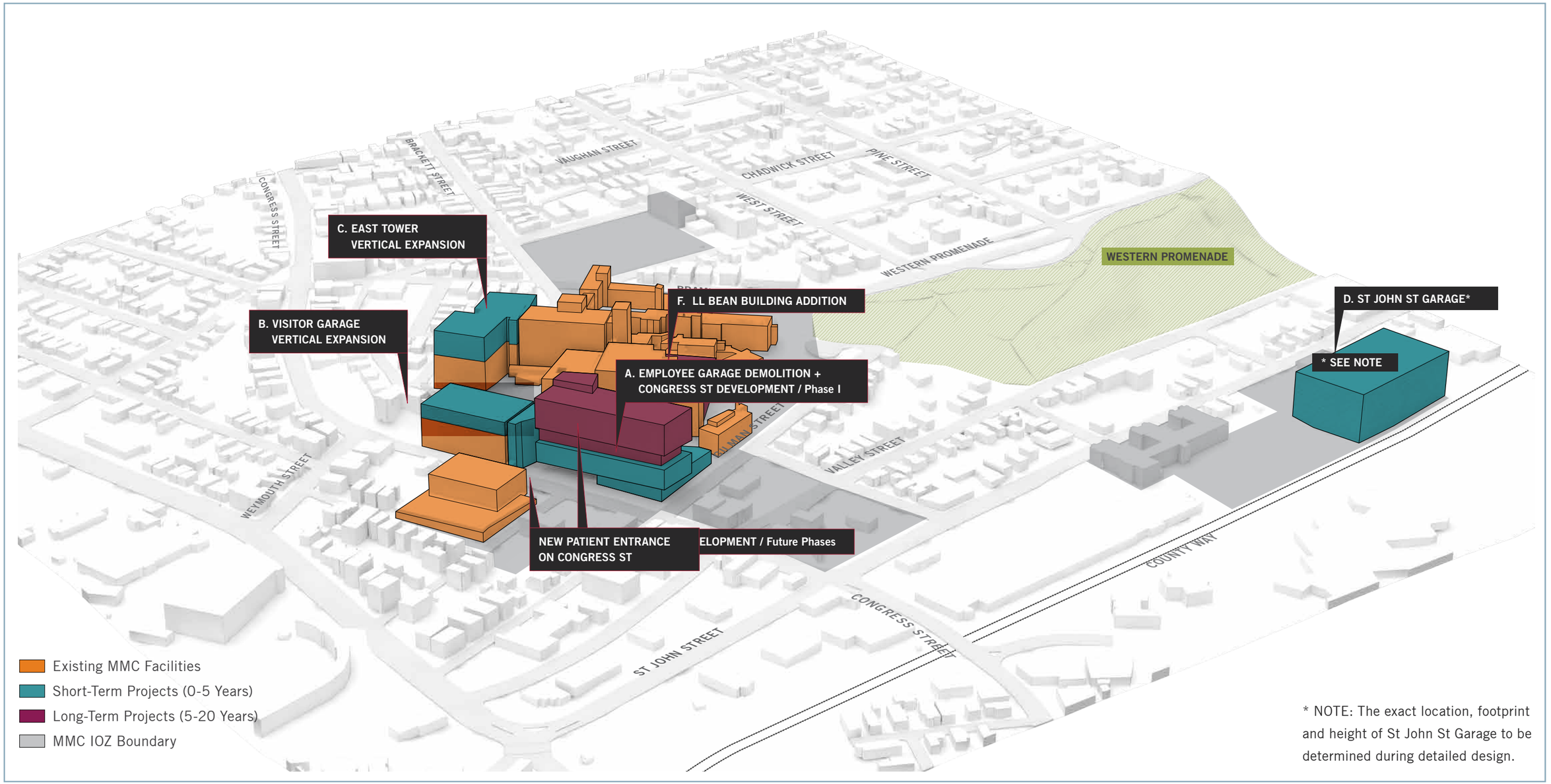


DESTINATION	LOCATION	LEVEL	NEAREST ELEVATOR
Admitting	Main Entrance	G	Richards
ATM *Cash Machine*	Main Entrance	G	Richards
Barbara Bush Children's Hospital	Bean	6	Bean
The Boutique	Pavilion A	G	South
Cafeteria *Impressions Café*	Richards	G	Richards
Cardiac Cath Lab	Richards	8	Richards
Cardiac Intensive Care Unit *CICU*	Richards	9	Richards
Cardiology	Richards	1, 7, 9	Richards
EKG/Echocardiography	Pavilion A	2	South
Ambulatory Cardiac Care Unit *ACCU*	Pavilion C	2	South
Cardiothoracic Intensive Care Unit *CTICU*	Bean	G	Bean
Cashier	Pavilion A	G	Pavilion A
Chapel/Prayer Room	Maine General Building	1	Pavilion A
Clinics	Pavilion D	G, 1, 2	South
OB/Gyn, Surgical, Pediatric Cardiovascular Specialty Clinic			
Continuing Care Nursery	East Tower	3	East
Dana Health Education Center	Dana Center	1	Pavilion A
Dialysis	Richards	5	Richards
Emergency	Richards	B	Richards
Endoscopy	Pavilion D	4	South
Family Birth Center	East Tower	G	East
Labor & Delivery/Recovery Mother-Baby Care			
Flower Box	Main Entrance	G	Richards
Gibson Pavilion	Bean	5	Bean
Gift Shop	Pavilion A	G	South
Joint Replacement Center	Bean	2	Bean
Laboratory	Pavilion A	G	South
Medical Records	Maine General Building	1	Pavilion A
Neonatal Intensive Care Unit *NICU*	East Tower	3	East
Outpatient Registration	South Entrance	G	Pavilion A
Pediatric Intensive Care Unit *PICU*	Bean	G	Bean
The Pharmacy	East Tower	G	East
Pavilion Grill	Pavilion A	G	South
Prenatal Care & Education	East Tower	G	East
Psychiatric Unit	Pavilion C	6	Pavilion C
Radiation Therapy	Radiology	B	South
Radiology	Radiology	B	South
X-Ray, CT Scan, MRI, Nuclear Medicine, Ultrasound, Pediatric Radiology			
Short Stay Unit *SSU*	Pavilion C	4	South
Special Care Units *SCU*	Bean	G	Bean
Surgery	Richards	B	Bean
Volunteer Services	Maine General Building	1	Pavilion A

Figure 4

MMC Bramhall Campus
Short and Long-Term Projects

(FROM MMC INSTITUTIONAL DEVELOPMENT PLAN, 2017)



* NOTE: The exact location, footprint and height of St John St Garage to be determined during detailed design.

Figure 5

MMC Bramhall Campus
Short and Long-Term Projects

(FROM MMC INSTITUTIONAL DEVELOPMENT PLAN, 2017)

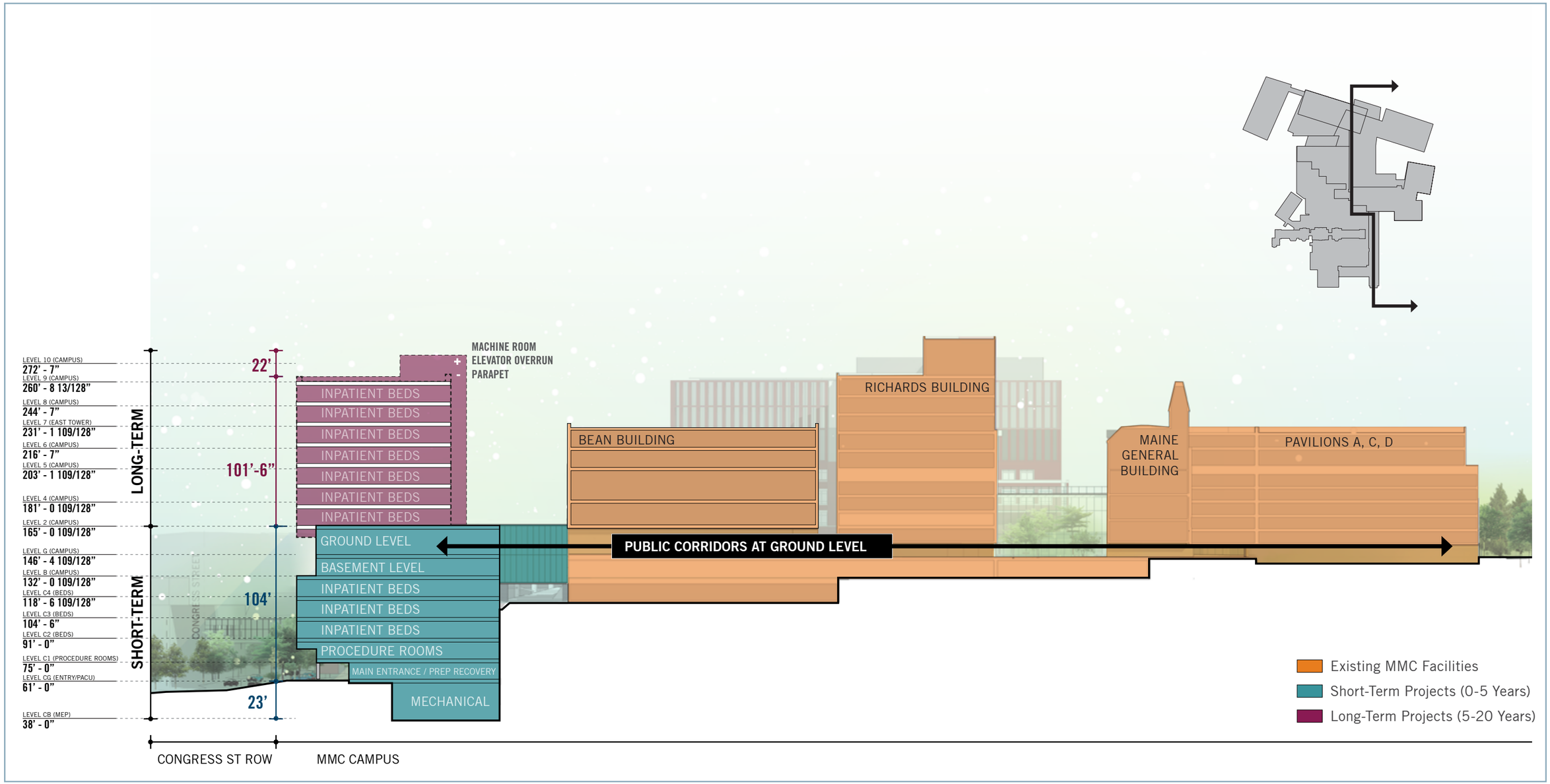
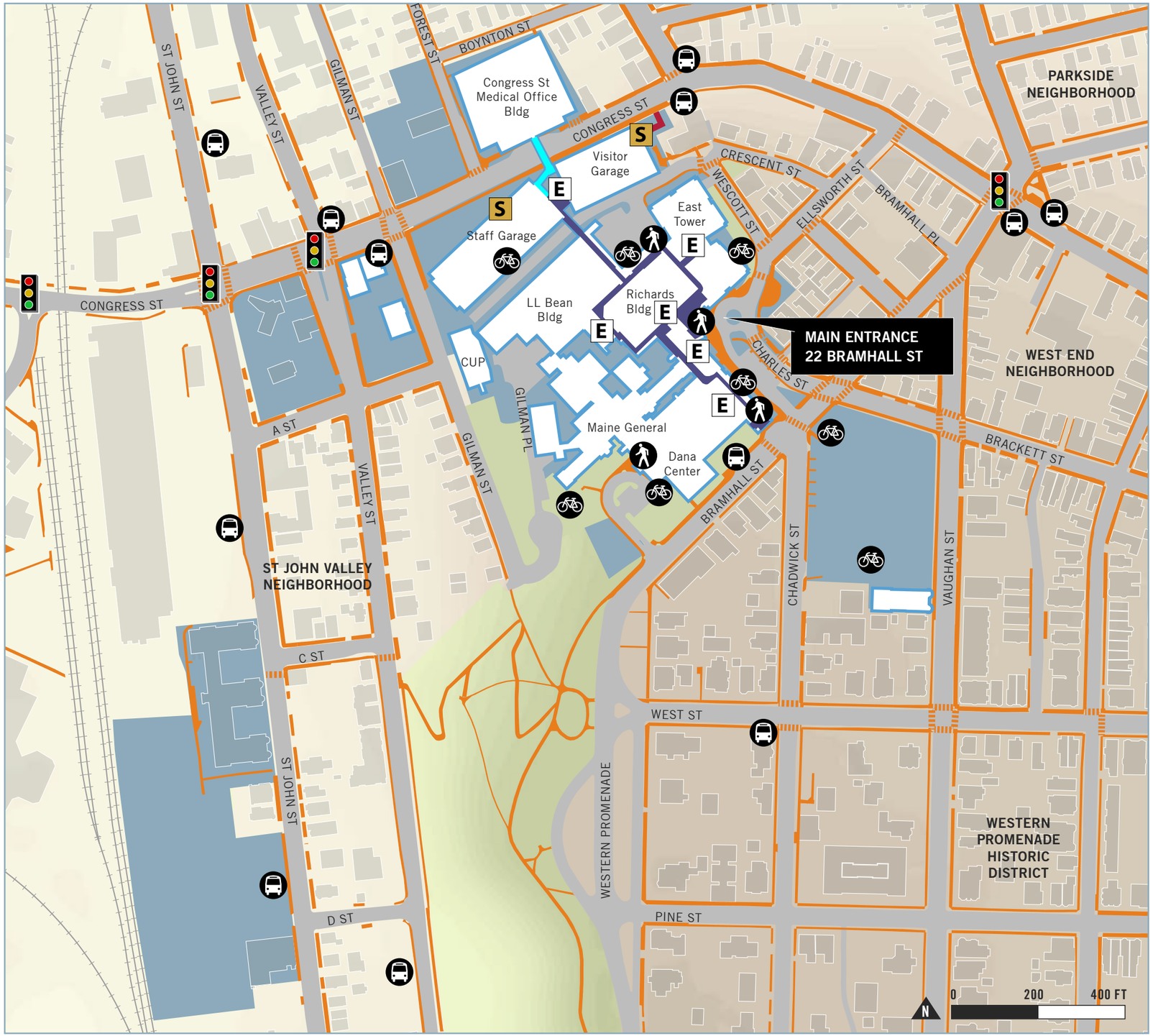


Figure 6

Existing Pedestrian Network

The MMC Bramhall campus straddles a steep hill that rises about 100 feet between Congress Street, Portland's main street, to Bramhall Street where the hospital's main entrance is located. A series of public corridors take patients and visitors from the main entrance to all clinical destinations and public amenities on campus. A pedestrian bridge carries the corridor over Crescent St to the Staff and Visitor Garages. From here, campus users can take the parking elevators to Level C2 to access a bridge across Congress St to reach the medical office building, or to Level CG to walk out to Congress Street. The stairwells that are connected to the Staff and Visitor Garages can also be used for egress onto Congress Street but are accessed by card or with key only*. Today, there are no official pedestrian entrances to the hospital complex along Congress Street.

** The Visitor Garage stairway was built in 2005 to provide public access between the MMC campus and Congress St, per requirement #16 of the 2005 Contract Zone Amendment. Due to chronic misuse of the stairway space, MMC installed security features that allow egress-only.*



PUBLIC PEDESTRIAN INFRASTRUCTURE

- Sidewalks and Pathways (from City of Portland GIS, 1/5/2018)
- Crosswalks
- Transit Stop
- Traffic-Light-Controlled Intersection

MAINE MEDICAL CENTER (MMC) PEDESTRIAN INFRASTRUCTURE

- MMC Campus Public Circulation, Ground Level
- MMC Campus Public Circulation, Level CG (Congress St)
- MMC Campus Public Circulation, Level CB (Staff Entrance)
- E MMC Public Elevators
- S MMC Stairway, Public Egress-Only
- MMC Bicycle Rack Locations
- MMC Public Pedestrian Entrances

MMC INSTITUTIONAL OVERLAY ZONE (IOZ)

- MMC IOZ Parcels
- MMC Buildings
- Non-MMC Buildings within MMC IOZ

Figure 7

Future Pedestrian Network

The MMC Campus Replacement and Modernization Project, which is described in the MMC Institutional Development Plan and illustrated in Figure 4 on page 6, will replace the existing Staff Garage with a new hospital building fronting Congress Street with a new drop-off and pedestrian entrance. Patients and visitors will be able to take elevators from the lobby area to the main public level of the hospital. The Visitor Garage stairway will remain egress-only per the current agreement between MMC, the City and neighbors. As part of this project, MMC proposes to improve the sidewalk between Gilman Street and the Visitor Garage and add a landscaped pedestrian space along the sidewalk that will moderate the 23 feet difference in grade between the new drop-off and Gilman St. A card-controlled staff entrance will be located at the corner of Congress and Gilman Sts. Sidewalk improvements and new crosswalks are also proposed for key routes between the proposed staff garage on St John St and the new staff entrance.

PUBLIC PEDESTRIAN INFRASTRUCTURE

- Sidewalks and Pathways (from City of Portland GIS, 1/5/2018)
- Proposed Sidewalk Improvements
- Existing Crosswalks / Proposed New Crosswalks
- Transit Stop / Traffic-Light-Controlled Intersection

MAINE MEDICAL CENTER (MMC) PEDESTRIAN INFRASTRUCTURE

- MMC Campus Public Circulation, Ground Level
- MMC Campus Public Circulation, Level CG (Congress St)
- MMC Campus Public Circulation, Level CB (Staff Entrance)
- E MMC Public Elevators / S MMC Stairway, Public Egress-Only
- MMC Bicycle Rack Locations
- MMC Public Pedestrian Entrances / MMC Staff Entrance

MMC INSTITUTIONAL OVERLAY ZONE (IOZ)

- MMC IOZ Parcels / MMC Buildings
- Non-MMC Buildings within MMC IOZ

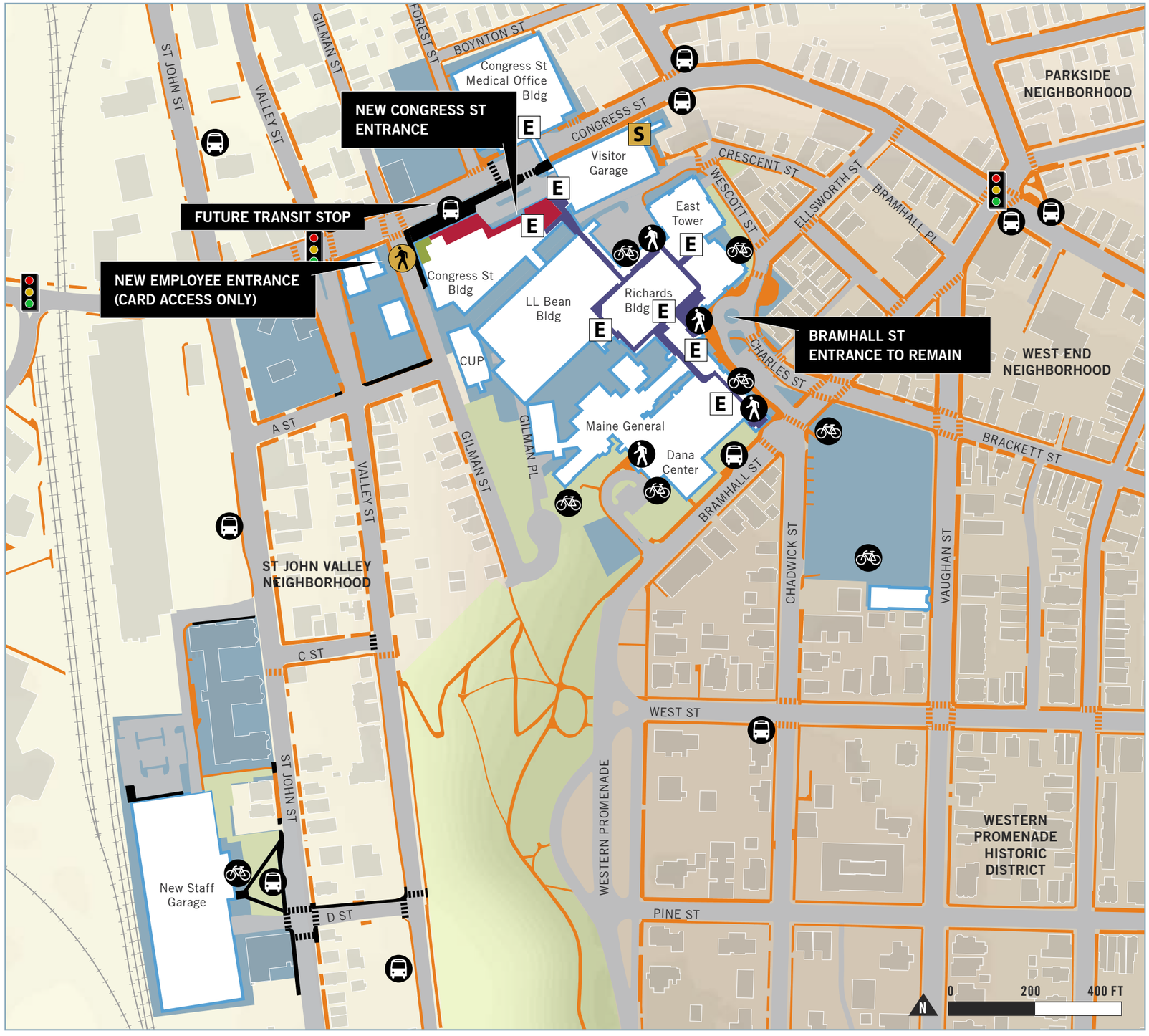


Figure 8

Proposed Pedestrian Improvements

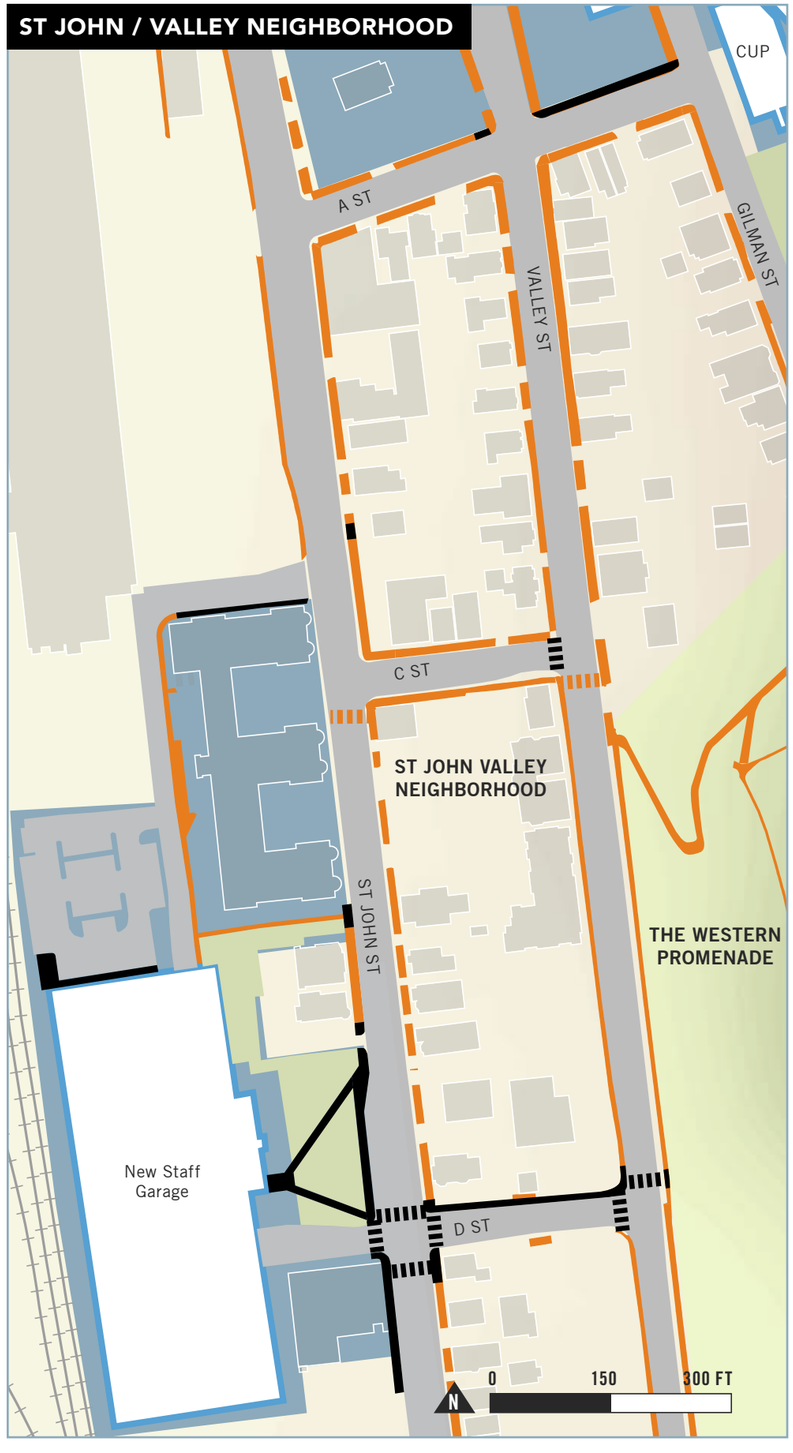
The following pedestrian and CPTED improvements are proposed as part of MMC's Campus Replacement and Modernization Project:

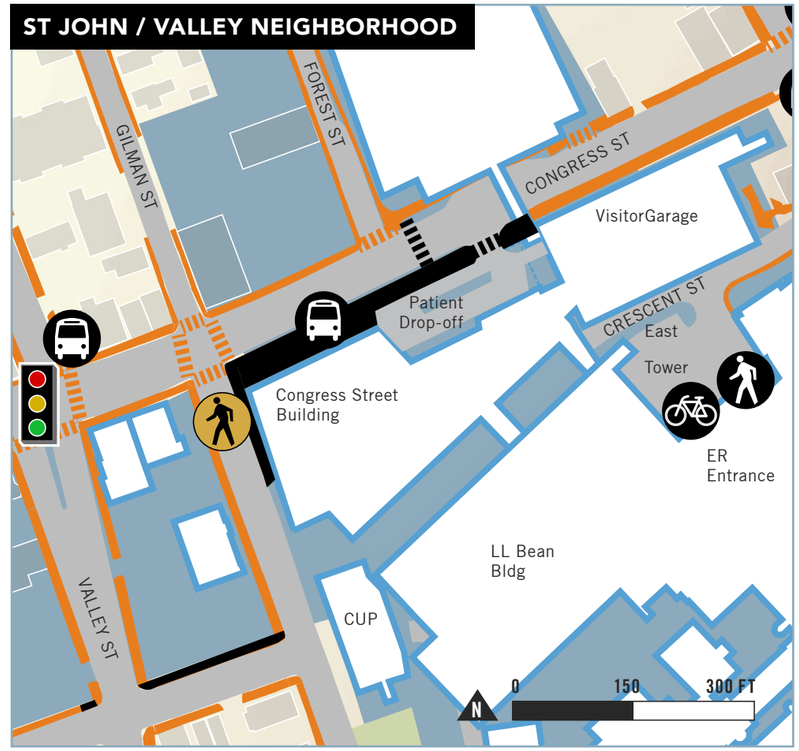
ST JOHN VALLEY NEIGHBORHOOD:

- New or repaired brick sidewalks and new standard crosswalks that meet the City of Portland Technical Standards:
  A, C, and D Streets, St John Street, and Valley Street (see Figure at right for specific locations)
- New pocket park between the Staff Garage and St John Street

CONGRESS STREET:

- New entrance provides public pedestrian connection between Congress Street and the main public floor of the uphill MMC campus
- New concrete sidewalk, as shown, in front of Congress Street Building and alongside its Gilman St facade
- Expanded sidewalk zone with pedestrian-friendly landscape moderating the grade difference between the drop-off plaza and Gilman Street
- New transit stop with shelter in front of the Congress St Building
- New Crosswalk on Congress at Forest Street
- New card-controlled staff entrance at the corner of Gilman Street





PUBLIC PEDESTRIAN INFRASTRUCTURE

- Sidewalks and Pathways (from City of Portland GIS, 1/5/2018)
- Proposed Sidewalk Improvements
- Existing Crosswalks
- Proposed New Crosswalks
- Transit Stop
- Traffic-Light-Controlled Intersection

MAINE MEDICAL CENTER (MMC)

- MMC Bicycle Rack Locations
- MMC Public Pedestrian Entrances
- MMC Controlled Staff Entrance
- MMC IOZ Parcels
- MMC Buildings
- Non-MMC Buildings within MMC IOZ

Figure 9

Crime Prevention Through Environmental Design (CPTED)

The MMC Campus Replacement and Modernization Project integrates best practices in CPTED to create a safe pedestrian environment along the campus edge. Key improvements include:

- The new pedestrian entrance on Congress Street provides a safe and secure public connection between Congress Street and the main public floor of the uphill MMC campus
- The new Congress St Building will increase pedestrian activity along Congress St. The sidewalk along the new building will be lit with pedestrian-oriented lighting meeting the City's Technical Standards.
- The englazed building lobby, which overlooks Congress Street, will provide "eyes on the street" and additional nighttime lighting for this zone
- Pedestrian improvements envisioned for the multiple routes between the Staff Garage and the Staff Entrance will be lit in accordance with City's Technical Standards
- Closure of the Visitor Garage stairway to public access from Congress Street addresses safety and security issues related to misuse of this space.

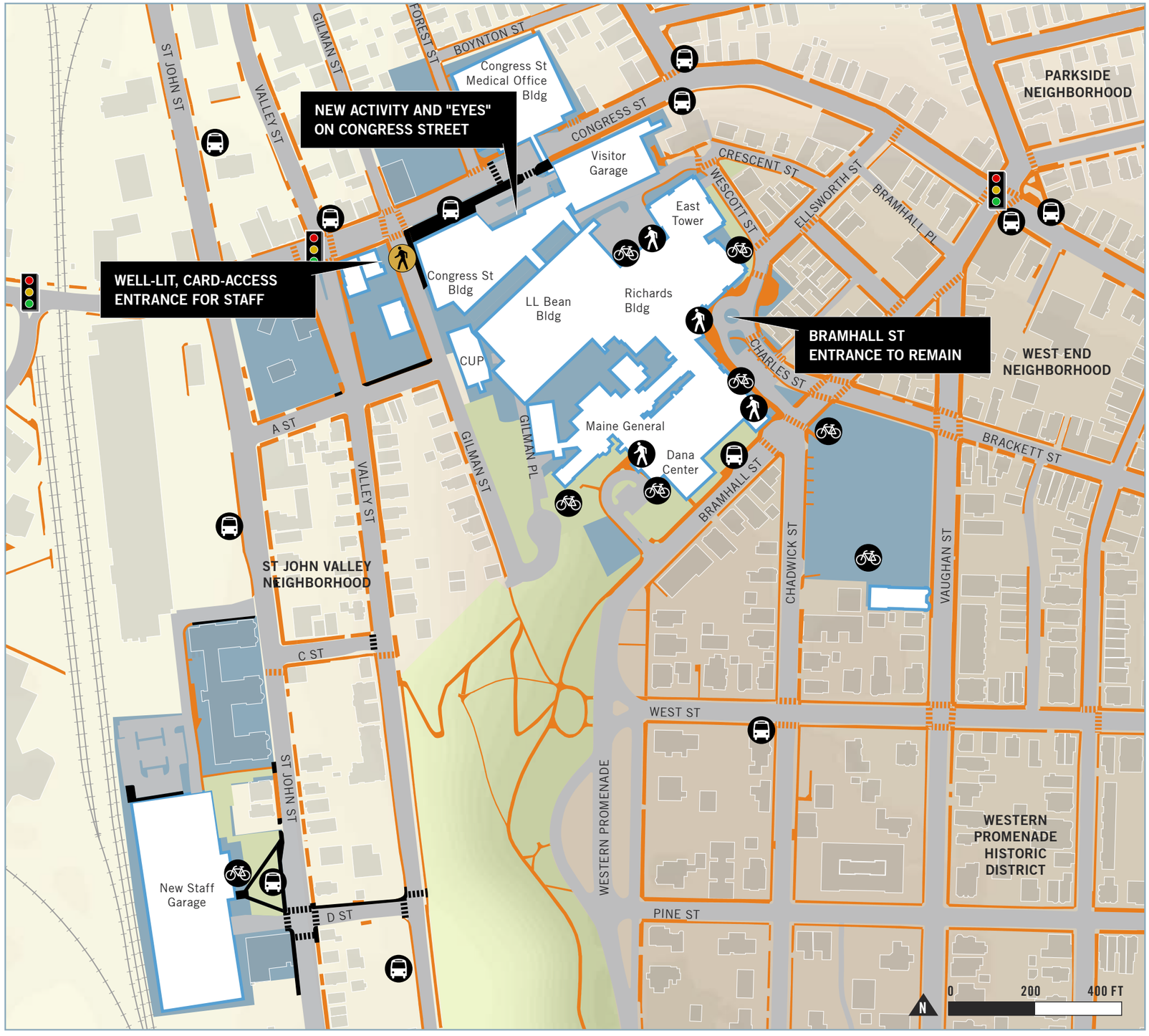


Figure 10

Sidewalk Materials

The MMC Institutional Overlay Zone (IOZ) and the surrounding area has a mix of sidewalk materials as surveyed by the City of Portland, and illustrated at right.

As indicated in the approved Institutional Development Plan, MMC may request waivers from the city's sidewalk material policy during site plan review in order to ensure safe pedestrian access to campus facilities.

MMC has identified the following sidewalk materials for public realm improvements included in its MMC Campus Replacement and Modernization Project :

- Brick sidewalks for proposed sidewalk improvement on A, C, and D Streets, St John Street, and Valley Street (See "Figure 8" on page 10 for locations)
- Concrete sidewalks in front of the future MMC Congress Street Building and alongside its Gilman St facade (See "Figure 8" on page 10 for locations)

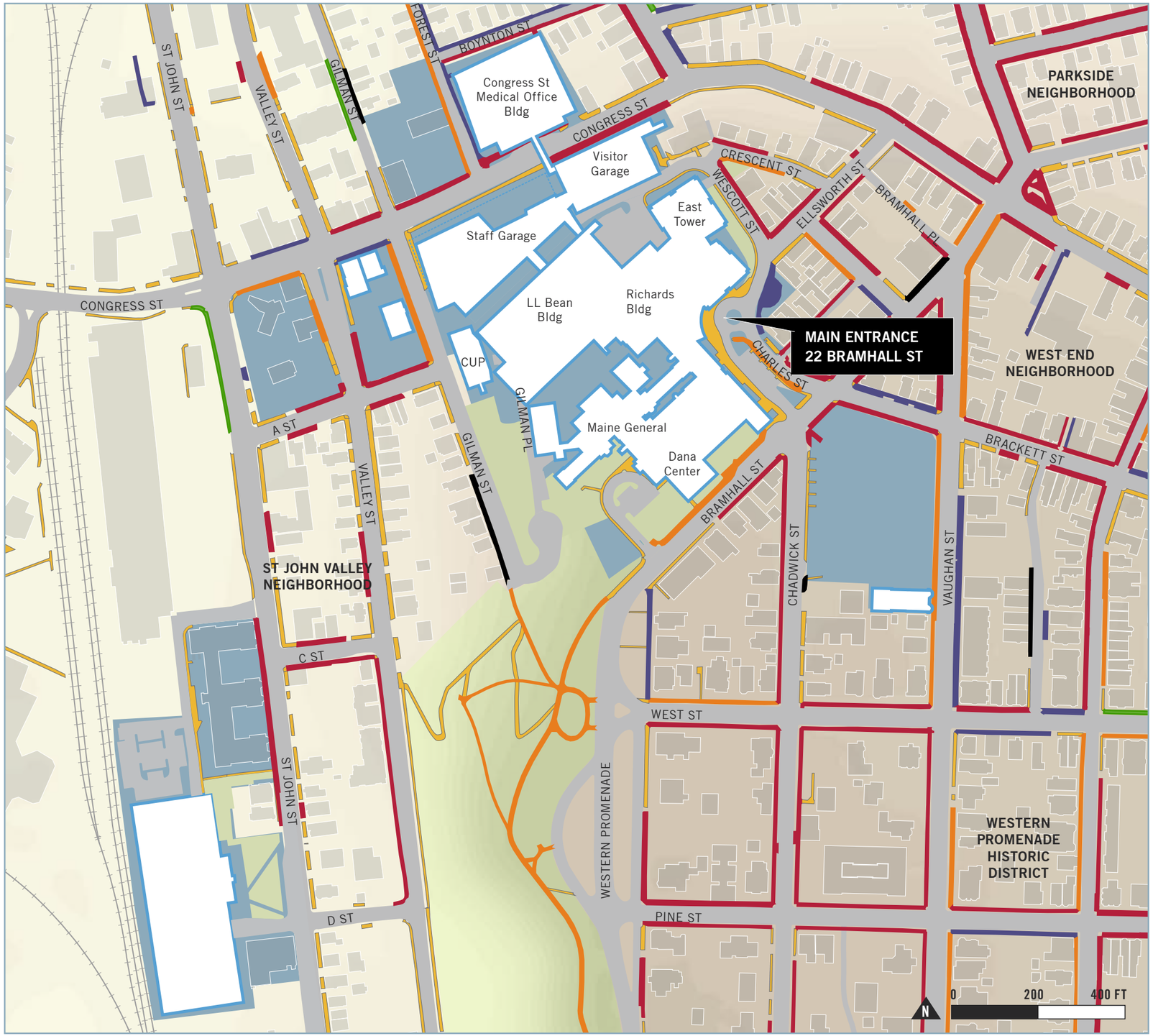
No additional changes are planned on campus sidewalks at this time.

SIDEWALK MATERIALS FROM CITY OF PORTLAND GIS

- Brick Sidewalks
- Brick-Concrete Sidewalks
- Concrete Sidewalks
- Asphalt-Brick Sidewalks
- Asphalt Sidewalks
- Other Sidewalks, no material listed

MAINE MEDICAL CENTER (MMC)

- MMC Bicycle Rack Locations
- MMC Public Pedestrian Entrances
- MMC Controlled Staff Entrance
- MMC IOZ Parcels
- MMC Buildings
- Non-MMC Buildings within MMC IOZ



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Maine Medical Center Campus-Wide Parking Study

Overview

Maine Medical Center (MMC) retained VHB to conduct a campus-wide parking study that includes an analysis of demand and supply for patient, visitor, and employee parking on MMC's Bramhall Campus. This parking study incorporates the targeted impact of MMC's Transportation Demand Management program.

This study quantifies the existing and future parking conditions, with a focus on peak period demand requirements, to help quantify and formulate sound parking strategies to adequately support MMC's patients, visitors, staff, and physicians into the future. The study took into consideration the assessment of two distinct user groups on-campus: patients/visitors and employees (all staff including physicians, nurses, administration, etc.). It also looked at all MMC-controlled parking, including both the on-campus parking as well as off-site, remote staff parking.

Existing Parking Supply

Table 1: Existing MMC Bramhall Campus Parking Supply Summary provides a summary of existing MMC parking spaces. Currently, there are 850 patient/visitor parking spaces. All patient/visitor parking spaces are located on-campus. There are 2,027 employee parking spaces.

Table 1: Existing MMC Bramhall Campus Parking Supply Summary

		Patient / Visitor	Employee	Total at Facility	Ownership
ON-CAMPUS	Employee Garage	0	1,274	1,274	*Owned*
850 patient/visitor spaces	Patient/Visitor Garage	480	0	480	*Owned*
1,538 employee spaces	South Lot	370	0	370	*Owned*
	887 Congress (Forest St Garage)	0	178	178	*Owned*
	7 Bramhall St	0	26	26	*Leased*
	905 Congress St (Sportsman Lot)	0	60	60	*Leased*
OFF-CAMPUS	222 St John St (First Atlantic Lot)	0	283	283	*Leased*
489 employee spaces	181 High St (Gateway Garage)	0	100	100	*Leased*
	993 Congress St (Classic Lot)	0	97	97	*Owned*
	321 Brackett St	0	9	9	*Leased*
	Total Parking Spaces	**850**	**2,027**	**2,877**	

Existing Parking Demand

MMC has continued to witness intensifying demands on the existing parking supply due to increased patient volumes and higher acuity patients with longer lengths of stay. Under current conditions, MMC's staff parking system typically operates at capacity during the weekday daytime hours. When off-site, remote staff parking facilities reach capacity, staff is directed to park on-campus in the Congress Visitor Garage. Some staff members independently choose to park nearby utilizing neighborhood on-street parking, although this is discouraged by MMC.

Patients, visitors, and staff at MMC often comment on the lack of adequate and predictable parking. MMC parking facilities do not have integrated technologies to accurately report parking utilization. Therefore, current demand was estimated using a combination of observed data and comparisons to facilities similar to MMC's Bramhall Campus.

Observations:

On behalf of MMC, VHB conducted on-site parking usage observations in January and March 2017. These months were ideal for parking observations because of the poor weather resulting in increased parking utilization. VHB collected parking count data during peak hours, which included late afternoon, evening, and overnight occupancy and turnover. Parking observations were completed during weekdays when MMC typically sees its biggest parking challenges – Tuesday – Friday. Historically, the highest patient volumes at MMC are on Thursdays and Fridays according to the MMC team responsible for managing parking. High patient volumes coincide with higher volumes of staff. The counts indicate that the parking system typically operates at or above capacity during weekday daytime hours. During the observations, it was difficult for VHB to differentiate staff from patients and visitors. Therefore, a total demand estimate is provided.

The observed data reveals that parking demand at the Bramhall campus among patients, visitors, physicians, and staff total roughly 3,125. MMC parking facilities have capacity of 2,877. The observed parking demand is almost 110% of supply. The observed parking demand is 4.4% below the expected parking demand (3,264) for a suburban hospital of MMC's size, according to Institute of Transportation Engineers (ITE) parking demand projections.[1] The difference equates to a shortage of 139 parking spaces.

In addition to VHB's observations, the MMC staff responsible for managing parking has estimated the employee parking deficit to be between 200 and 300 spaces.

Comparison to Peer Group:

VHB compared MMC's parking ratio per licensed bed to other hospitals in New England and nationally. MMC's 850 patient/visitor parking spaces equate to 1.33 parking spaces per bed which is low compared to peers. The midpoint patient and visitor parking space/licensed bed ratio among MMC peers is 1.87. It is important to note that based on a review of peer institutions, MMC would need to increase its patient/visitor allocation by 341 spaces, or 40%, to achieve a similar beds-to-spaces ratio as its peers. MMC's 2,027 staff parking spaces equate to 3.18 parking spaces per bed which is also low when compared to other peer institutions. The midpoint employee parking space/licensed bed ratio among MMC peers is 4.38. MMC has 637 licensed beds.

When compared to peers, MMC has a shortage of 341 patient and visitor parking spaces and 763 staff parking spaces.

$$\begin{aligned} &\textit{MMC Licensed Beds}\ (637) * \textit{Comparison Group Patient \& Visitor Parking Space per Bed}\ (1.87) \\ &\quad = \textit{Peer Equivalent Patient \& Visitor Parking Spaces}\ (1{,}191) \\ &\quad - \textit{MMC Patient \& Visitor Parking Space}\ (850) \\ &\quad = \boldsymbol{\textit{Patient \& Visitor Parking Space Deficit at MMC}\ (341)} \end{aligned}$$

$$\begin{aligned} &\textit{MMC Licensed Beds}\ (637) * \textit{Peer Group Staff Parking Spaces per Bed}\ (4.38) \\ &\quad = \textit{Peer Group Equivalent Staff Parking Spaces}\ (2{,}790) - \textit{MMC Staff Parking Spaces}\ (2{,}027) \\ &\quad = \boldsymbol{\textit{Staff Parking Space Deficit at MMC}\ (763)} \end{aligned}$$

Current Demand:

MMC used the observed and peer group data to determine the estimated parking demand.

Based on data available, the estimated current MMC parking demand exceeds patient and visitor supply by approximately 25 parking spaces and exceeds employee parking supply by approximately 220 parking spaces. Therefore, the estimated parking demand in 2017 is:

Table 2: 2017 Estimated Parking Demand

- 875 for patient and visitor parking ($875 = \textit{Current Patient Visitor Parking Supply}\ (850) + 25$)
- 2,250 for employees ($2{,}250 = \textit{Current Employee Parking Supply}\ (2{,}027) + 220$)
- 3,125 total estimated parking demand

The current parking demand for MMC's Bramhall campus is approximately 3,125 parking spaces.

[1] This approach is consistent with the City of Portland's Technical Manual, which recommends using ITE for parking demand projections. https://www.portlandmaine.gov/2148/TDM-Parking

MMC feels that the appropriate metric to measure parking utilization is parking demand per Bramhall campus employee. This metric is ideal because the number of employees will change over time. Other metrics such as parking space per bed or parking space per square foot would not accurately account for all factors impacting parking demand on campus. This metric allows for changes in both factors – the number of employees and parking demand. In addition, this metric focuses on MMC employees who are the target population of this transportation demand management plan.

MMC's Bramhall campus has roughly 6,000 employees as of 2017. Therefore the current employee parking demand per Bramhall campus employee is 0.375.

$$\frac{Estimated\ Employee\ Parking\ Demand\ (2{,}250)}{MMC\ Bramhall\ Employees\ (6{,}000)} = Employee\ Parking\ per\ Bramhall\ Employee\ (0.375)$$

Future MMC Parking Actions

MMC has proposed multiple capital projects and programs in connection with the Master Facility Plan outlined in MMC's IDP. Near-term (completed by 2021) projects to expand parking supply include:

1. Patient / Visitor Garage Addition: Expand the existing 480-space Patient/Visitor Garage by three levels to accommodate an additional 225 spaces; and
2. New St John St Garage: Construct a new 2,450 space parking garage on the nearby St. John Street and demolish the existing 1,274-space Employee Garage.

The resultant 2021 parking supply upon completion of these near-term projects is summarized in **Table 3: Expected 2021 MMC Bramhall Campus Parking Supply Summary**.

Table 3: Expected 2021 MMC Bramhall Campus Parking Supply Summary

		Patient / Visitor	Employee	Total at Facility	Ownership
ON-CAMPUS	Patient/Visitor Garage	705	0	705	*Owned*
1,075 patient/visitor spaces	South Lot	370	0	370	*Owned*
264 employee spaces	887 Congress (Forest St Garage)	0	178	178	*Owned*
	7 Bramhall St	0	26	26	*Leased*
OFF-CAMPUS	New Employee Garage	0	2,450	2,450	*Owned*
2,459 employee spaces	321 Brackett St	0	9	9	*Leased*
	Total Parking Spaces	**1,075**	**2,654**	**3,729**	

Per September 22, 2017 Institutional Development Plan

As shown in **Table 3**, the patient parking supply by 2021 will increase by 225 spaces and the employee parking supply will increase by 627 spaces with these two parking projects completed. With the new Employee Parking Garage located off-campus, the amount of employees who park remotely will increase from about 25 percent to 90 percent.

MMC anticipates consolidating the Gateway Garage and Classic Lot parking spaces into the new employee garage following the opening of the new parking garage.

These efforts are intended to enable MMC to continue with their primary Master Plan goals, which include the expansion of important clinical programs and the de-coupling of semi-private patient rooms to fully private rooms. The proposed new hospital building will be located on the site of the former Employee Garage. As defined in the MMC IDP, the hospital anticipates that the overall patient load will grow by approximately eight percent over the next ten years (or about 0.75 percent per year). Similarly, employment at MMC is expected to grow by approximately 7 percent over the next ten years (or about 0.70 percent per year). The growth rates were applied to the 2017 MMC parking demands to reflect overall anticipated institutional parking growth. **Tables 4 and 5** summarize how the new construction will affect the occupancies over time.

Table 4: Future MMC Bramhall Campus Employee Parking Supply/Demand Summary

	2020	2022	2026
Parking Spaces	**2,654**	**2,723**	**2,723**
Effective Parking Capacity	**2,521**	**2,521**	**2,521**
Parking Demand	**2,465**	**2,500**	**2,570**

For employee parking garages, the effective parking capacity is 95% of striped parking spaces, shown in **Table 4**. This is due to the user group familiarity of the parking garage layout, circulation and general trends of the garage availability due to their daily use of the facility and the low space turnover. Effective capacity for the employee parking spaces is not 100% because of anticipated user compliance with lined spaces (i.e. parking in a way that limits the use of the adjacent parking space).

Table 5: Future MMC Bramhall Campus Patient/Visitor Parking Supply/Demand Summary

	2020	2022	2026
Parking Spaces	**1,075**	**1,075**	**1,075**
Effective Parking Capacity	**970**	**970**	**970**
Parking Demand	**892**	**905**	**933**

For patient/visitor garages, the effective parking capacity is 90% of striped parking spaces, shown in **Table 5**. Patients and visitors are often unfamiliar with the garage layout and operations. Planning to accommodate this targeted utilization will ensure arriving patients and visitors have convenient and available parking.

To help alleviate existing and future parking demands, and to support use of other alternative, sustainable modes of transportation, MMC continues to pursue and bolster its Transportation Demand Management (TDM). The purpose of the TDM Plan, called the Commuter Choice Program, is to reduce the amount of single-occupancy vehicles by enabling and promoting alternative modes of transportation to and from MMC's Bramhall Campus for MMC employees.

In the 2017 Transportation Demand Management plan, MMC established the following short-term, mid-term, and long-term single-occupancy vehicle reduction goals shown in **Table 6** below:

Table 6: 2017 TDM Trip Reduction Goals

	Short-Term (0-2 years)	Mid-Term (2-5 years)	Long-Term (5+ years)
Trip Reduction Target	2%	4%	5%

MMC will continue to monitor parking demand and needs at the Bramhall campus and re-evaluate its program goals. The estimated impacts of the TDM program's reduction goals are summarized in **Table 7**.

Table 7: Employee Parking Demand Reduction Due to TDM Efforts Summary

	2020	2022	2026
Parking Demand	**2,465**	**2,500**	**2,570**
Estimated TDM Reduction	**-60**	**-100**	**-120**
TDM Influenced Demand	**2,405**	**2,400**	**2,420**

If TDM targets are met, parking demand will reduce by approximately 60 in the short term (2020), 90 in the mid-term (2022) and 120 forecasting out to longer-term (2026). Such reductions strive to follow with less single-occupancy vehicles travelling to and from the Bramhall campus as intended by the Transportation Demand Management plan and programs.

Table 8: Employee Parking Demand Reduction Due to TDM Efforts Compared to Effective Employee Parking Capacity

	2020	2022	2026
Effective Employee Parking Capacity	**2,521**	**2,521**	**2,521**
TDM Influenced Demand	**2,405**	**2,399**	**2,420**
Estimated Parking Surplus	**116**	**122**	**101**

Table 8 compares the TDM influenced parking demand to the effective parking capacity for employee parking spaces. The amount of parking surplus fluctuates between 2020 and 2026 because of the time it will take for MMC to enhance the existing TDM program.

This analysis projects parking demand for 2026. The lifespan of the parking garage is expected to exceed 30 years. The estimated 2026 parking surplus in **Table 8** is roughly 4% of the total employee parking spaces shown in **Table 3** and is within a reasonable margin of error.

Conclusion

This study quantifies the existing and future parking conditions, with a focus on peak period demand requirements, to help quantify and formulate sound parking strategies to adequately support MMC's patients, visitors, staff, and physicians into the future. VHB determined that existing estimated parking demand at the Bramhall campus exceeds existing supply. The demand for complex healthcare in Maine is growing. As a result, MMC is growing to meet that demand. MMC's forecasts an increase in patient activity at the Bramhall campus by 2026. Using this forecast, VHB estimated a parking demand that will be accommodated only through investments in parking facilities and MMC's Transportation Demand Management program.

OO

October 30, 2018

Maine Medical Center
MaineHealth

Nell Donaldson, Senior Planner
City of Portland Planning Division
389 Congress Street
Portland, ME 04101

Re: MMC Congress Building| 22 Bramhall St| Level III Site Plan
Response to City Reviewer Comments 1

Dear Nell:

Thank you for coordinating the review of the Maine Medical Center Congress Building project located at 22 Bramhall with frontage on Congress St.. This letter provides a summation of our responses to the comments received from various reviewers as part of the Level III Site Plan process. The original comment in italics below, and our response follows each.

Comments from Transportation Project Manager – Bruce Hyman Dated October 10, 2018

1. *In general - the plans as presented do not show enough context to readily assess them. The scale and extent of the area shown should be revised. The shading/hatching patterns should be modified so the plan is legible when shown in its entirety on a computer screen - it currently is not legible.*

Response: The Site Plan scale has been changed to 1"=20 feet, providing more context as requested.

2. *I don't believe, based on the grading plan submitted, (C40-01/02) that the curb ramps serving the mid-block crosswalk meet ADA in terms of cross-slope (2% max. cross-slope) nor that the area shown for the bus stop has a bus landing area that meets ADA. Please document the ADA analysis.*

Response: The existing grade of Congress Street is uniformly 5.5%, exceeding ADA requirements. It is not possible to provide ADA compliant cross slopes.

3. *The grading plan for Gilman St appears incomplete/not shown in its entirety. Please show the entire site.*

Response: Submitted grading plan encompasses the entire site.

4. *Site Plan: The site plans do not show enough context of the entirety of the street configuration in the vicinity of the site - I'd request that the applicant resubmit and provide 1"=20' plans instead of the 1"=10' site plan (and 1"=5' grading plans - requires 2 sheets)*
    a. *The site plan key identifies #14 as "Bus Stop" but the elevations show a bus shelter - there is not sufficient bus landing area (5'x8' minimum") provided if a bus shelter is intended (or unless the landing area includes a portion interior to the shelter as the landing area - which is not preferred)*
    b. *No bus stop or shelter location is shown on the north side of Congress St as has been discussed with the applicant - a paired bus stop is desired*
    c. *The tree wells do not meet city design standard - they 1) do not use radius curb and 2) do not show a section of raised granite tree well along the Congress St curb line and 3) are not of standard size.*
    d. *The proposed street layout is not shown on the plans - locations of on-street parking, travel lanes, climbing bike lane, etc.*
    e. *Required signs (bus stop, etc) are not shown on the plans*
    f. *Curb ramp modifications on the opposite side of Gilman and Congress Streets are to be shown to achieve ADA compliance*
    g. *The sidewalks are shown on both Congress and Gilman Streets as broom finish concrete - I do not currently support this without further documentation of the need to stray from our Sidewalk Material Policy*

b. *I need to further assess curb ramp design- for instance, there is not sufficient landing area for the curb ramp serving the mid-block crossing along the retaining wall - a 5' deep (measured perpendicular to the street) ramp landing area is required where a ramp meets vertical obstructions (not the usual 4')*

Response: Response pending further conversations with City plan reviewers.

5. *Design Details: I did not find details available for the proposed materials within the public ROW: lighting, sidewalk, curb ramps, detectable warning panels, tree wells, bus shelter (if proposed), etc.*

Response: Acknowledged – new materials being submitted.

Comments from City of Portland Planning Division – Nell Donaldson Received October 10, 2018

1. *Dimensional Requirements: Provide analysis with respect to dimensional requirements in the revised submittal.*

Response: A complete zoning assessment will be submitted separately.

2. *Design: Please provide floor plans in revised submittal.*

Response: Floor plans are submitted in the October 30, 2018 submittal.

3. *Construction Management:*
   a. *Please provide some discussion on attempts to minimize impacts to pedestrian circulation along the south side of Congress Street. Could sidewalk closure be limited to certain construction/demolition phases?*

      Response: A temporary sidewalk or bike lane is not recommended by the Construction team. The construction fence will need to be maintained in the location outlined in the CMP for the majority of the project. It will be possible to set the construction fence back after significant structural, site work, and material deliveries are complete. Turner estimates that these activities will be completed in the Fall of 2022.

   b. *Provide discussion on bike accessibility around the construction site.*

      Response: Share the road signs will be erected on Congress Street in each direction and Gilman Street prior to the roadway narrowing. These signs will remind drivers to be aware of bicyclists.

4. *Access and Circulation:*
   a. *Please provide a circulation plan showing how visitors and employees access the main entrance/employee entrance by different modes.*

      Response: Revised plans for the Congress St. entrance will include details of the pedestrian access and traffic controls to that will ensure pedestrian safety.

   b. *Further discussion on the street layout pending. At the least, a climbing bike lane should be shown on Congress Street.*

      Response: Traffic and transportation discussions are on-going with the City. The final cross section will be determined in coordination with City staff.

   c. *The Congress Street sidewalk should be widened as possible to provide better pedestrian access along the site frontage*

      Response: Traffic and transportation discussions are on-going with the City. The final cross section will be determined in coordination with City staff.

d. *A sidewalk material waiver request should be submitted. Pending review of this request, in places where sidewalk material is proposed to transition, details should be provided. Ideally, transitions would occur at curb cut locations.*

Response: A sidewalk material waiver request is included with the October 30, 2018 submittal. The concrete to brick transition has been relocated to the east, coinciding with an existing granite accent band in the sidewalk near the MMC visitor garage.

e. *A sidewalk waiver request should be submitted for the Gilman Street frontage.*

Response: A sidewalk waiver request for the Gilman frontage is included in the October 30, 2018 submittal.

f. *Provide more information on 'mechanical areaway' showing in the Gilman Street ROW. This appears to be a sidewalk obstruction?*

Response: This will be a flush sidewalk condition similar to image provided with a hatch. Areaway is to allow for equipment removals or replacements and used very rarely. Perkins & Will is exploring relocating the areaway so as not to interfere with the Gilman St. ROW.

g. *Confirm how a pedestrian coming from the west would access the front door on foot if stairs are not an option?*

Response: In addition to the stairs, pedestrians can access the Congress St entrance from the Eastern side of curb cut adjacent to pedestrian bridge across Congress St.. Revised plans for the Congress St. entrance will include details of the pedestrian access and traffic controls to that will ensure pedestrian safety.

5. *Public Transit Access:*
   a. *Plans have been forwarded to METRO for review. Further discussion of bus shelters and associated access improvements (including crosswalk and north side shelter) pending.*

Response: Metro expressed a desire to consolidate the North-bound and South-bound Gilman St. / Congress St. bus stop and the Weymouth St. / Congress St. bus stop to a location as close to the MMC Congress St. entrance as possible. Metro also desires a bus shelter designed to Metro standards. The City of Portland / METRO / and MMC are still discussing the opportunities and challenges of this consolidation. The location of the consolidated bus stop is related to the ongoing conversation about the Congress St. streetscape design.

b. *At the least, bus shelter as proposed lies in the middle of the pedestrian desire line. Please propose alternate location.*

Response: The bus shelter could be placed on MMC property which would require an agreement between MMC and the City of Portland. This is an ongoing conversation with the Metro, the City, and MMC.

6. *Parking:*
   a. *Bike racks should be provided at this entrance. Please indicate on revised plans.*

Response: Attached diagram for consideration. This coincides with LEED efforts as well. Thought is to use covered portion in garage that is not ideal for parking due to entrance of cars.

7. *Landscaping and Landscape Preservation:*
   a. *See comments from others forthcoming.*

Response: Waiting for comment.

b. Provide street trees on Gilman Street.

Response: Street trees on Gilman St may be interference with the planned employee shuttle drop-off. The design team is evaluating this now.

8. *Water Quality, Storm Water Management and Erosion Control:*
   a. See comments from others.

   Response: Acknowledged

9. *Public Safety and Fire Prevention:*
   a. See comments from others forthcoming.

   Response: Acknowledged

10. *Availability and Adequate Capacity of Public Utilities:*
    a. Utility plans are still under review.

    Response: Acknowledged

11. *Exterior Lighting:*
    a. Please provide light fixture cut sheets for all lights proposed.

    Response: Cut sheets will be uploaded to eplan.

    b. Photometric plan should show average and max illumination levels.

    Response: Revised Photometric Plans are included in the October 30, 2018 submittal.

    Signage and Wayfinding:

    c. Revised sign plan still under review.

    Response: Acknowledged. A revised sign plan will be submitted to the City based on a conversation with Nell Donaldson and Caitlin Cameron on October 25, 2018.

12. *Zoning Related Design Standards:*
    a. See comments from Others.

    Response: Acknowledged

13. *Other Submittals Required.*
    a. Utility capacity letters

    Response: Acknowledged

    b. Plan edits
        i. Rescale site plan at 1" = 20'
        ii. Include distances to property lines on site plan
        iii. Add height calculation from average grade on elevations
        iv. Plans need to be stamped by an engineer

Response: A complete zoning assessment will be submitted separately.

14. *RTI (Rights, Title or Interest)*
    a. *Encroachments (building and 'mechanical areaway') into Gilman ROW need further review.*

    Response: Acknowledged

15. *Other Permits/Reviews Required:*
    a. *Site Location of Development*

    Response: DEP documentation underway.

    b. *FAA*

    Response: MMC will be submitting the FAA permit request for the building. Turner will be submitting for the crane. We do not anticipate submitted the permit request or receiving approval prior to the end of calendar year 2018.

16. *Waivers:*
    a. *Please provide formal requests for sidewalk material waiver and waiver of sidewalk along Gilman Street.*

    Response: A sidewalk material waiver request is included with the October 30, 2018 submittal.

17. *Outstanding Items from Earlier Reviews:*
    a. *Pedestrian Network Plan (requirement of IDP, included as condition of approval on East Tower) - That the applicant shall develop a long term public Pedestrian Network Plan (both on and off the ROW) showing the integration of the upper level MMC campus with the Congress Street corridor, including measures to address CPTED principles, for implementation when the retail space beneath the Visitors Garage is available for lease or sale; such plan to be submitted for review and approval by the Planning Authority prior to the issuance of a building permit for the Congress Street Hospital Entrance").*

    Response: A Pedestrian Network Plan will be uploaded to eplan on October 30, 2018.

Comments from City of Portland Traffic Consultant – Tom Errico, TY Lin Dated October 10, 2018

1. *A Traffic Movement Permit Scoping meeting is scheduled for October 23, 2018 and accordingly no comments are provided regarding off-site traffic impacts at this time.*

Response: Acknowledged

2. *The Gilman Street non-tangent curb alignment is not acceptable. A straight curb is suggested. Gilman Street width dimensions shall be provided.*

Response: Plans will be revised in future submissions when the Congress St configuration is determined.

3. *The flared curb ramp near the main entrance vehicle driveway is not acceptable partly because it creates a narrow pedestrian accessible route. Also, the crosswalk location should be evaluated.*

Response: Plans will be revised.

4. *The provision of the City's preferred two ramp configuration at the Gilman Street corner should be investigated.*

Response: Plans will be revised.

5. *Bus stop location and accessibility should be evaluated.*

Response: Please refer to above comments about ADA accessibility.

6. *Shuttle pick up and drop off operations at the employee entrance on Gilman Street should be detailed.*

Response: Complete shuttle routes to and from the Gilman Street entrance are on file with the City of Portland as part of the St John St garage site plan review. Shuttles will approach the Gilman St employee entrance from the South and stop to unload and load. The length of time for unloading and loading will vary but are estimated to be less than 15 minutes. The design team is revisiting the exact stop locations so as not to interfere with the street trees on Gilman St. that the City requested.

7. *Vehicle drop-off/pick-up operations/management at the vehicle loop should be provided.*

Response: Vehicles entering the site at the patient drop-off / pick-up area will be directed right to travel around the loop. A median will be constructed at the site access to prevent drivers from directly accessing the visitor garage without going around the loop. As the vehicles complete their drop-off or pick-up, they will have the choice of going straight to exit onto Congress Street or turning right to enter the visitor garage. This design allows vehicle interconnection between the patient loop and visitor garage without recirculating onto Congress Street, which can further reduce congestion and increase safety. Vehicles wishing to park and not drop-off or pick-up can use the existing full movement access to the visitor garage onto Congress St..

There will be exterior signage and interior signage that supports the traffic flow described above. Exterior signs will differentiate the Congress St patient pick-up / drop-off from the existing patient and visitor garage entrance. Signs within the existing patient and visitor garage will direct exiting traffic and traffic intending to pick-up a patient. Signs within the circle drive will direct traffic intending to exit the site and traffic intending to enter the patient and visitor parking garage. In addition to signs supporting the traffic flow, traffic exiting the patient and visitor garage will have a stop sign to support safe pedestrian access to the building's entrance.

There is enough length within the entrance loop for approximately 11 vehicles to queue on-site without backing onto Congress Street. Traffic engineers observed the exiting entrance on Bramhall St to better understand the frequency and volume of queueing at a MMC entrance. Traffic engineers observed a maximum of 9 queued vehicles. The volume of patient pick-ups and drop-offs will be split between the existing entrance and the proposed new entrance in the future.

MMC intends to support the operations of the Congress St. entrance with valet service. Valet parking will improve the flow of the circular drive. In addition, valet attendants will assist individuals who do not wish to take advantage of the service by providing directions when needed.

At the October 23, 2018 Planning Board workshop, a planning board member commented that snow melters would be an excellent addition to the Congress St. entrance. MMC will be adding snow melters to this entrance.

MMC will continue to support the patient arrival experience by communicating with patients and their families in advance of scheduled appointments. These communications include details about the correct hospital entrance and parking location.

A detailed site plan will be submitted that clarifies these movements in addition to pedestrian access.

8. *Pick-up/Drop-off loop interaction with parking garage entrance is a concern and an analysis should be provided.*

Response: A detailed site plan will be submitted that clarifies these movements in addition to pedestrian access.

9. *General sidewalk width given future pedestrian demand on Congress Street seems inadequate.*

Response: Pending conversation with the City reviewers.

10. *Congress Street cross-section width should specifically be detailed. How will bikes, parking, bus, vehicles be accommodated*

Response: MMC is currently working with the City on alternative cross-sections for Congress Street along the site frontage that will balance the priorities identified for the area.

11. *Pedestrian movements across the parking garage entrance to the Main Entrance is a concern.*

Response: Revised plans for the Congress St. entrance will include details of the pedestrian access and traffic controls to that will ensure pedestrian safety.

12. *A sidewalk on Gilman Street to A Street should be explored or a waiver analysis should be provided.*

Response: A sidewalk waiver request is submitted for consideration by the Planning Board.

13. *I have briefly reviewed the Construction Management Plan and noted the following:*
    a. *Local truck routings should be clearly documented from each construction entrance.*

    Response: Truck delivery routes are outlined in CMP. Truck routes exiting the construction site are submitted separately on October 30, 2018.

    b. *Roadway widths shall be detailed.*

    Response: An amendment to the CMP is provided via eplan on October 30, 2018

    c. *Is a temporary protected sidewalk on Congress Street feasible (if not for the entire project – but during certain phases).*

    Response: A temporary sidewalk or bike lane is not recommended by the Construction team. The construction fence will need to be maintained in the location outlined in the CMP for the majority of the project. It will be possible to set the construction fence back after significant structural, site work, and material deliveries are complete. Turner estimates that these activities will be completed in the Fall of 2022.

    d. *How will METRO service be accommodated.*

    Response: Existing stops will not change during construction. Two-way traffic will be maintained on Congress St.

Comments from City of Portland Civil Engineering Consultant – Wright Pierce Dated October 10, 2018

1. *Level III Site Plan applications with the City of Portland must submit a stormwater plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules. This includes conformance with the Basic, General, and Flooding Standards (Ref: Technical Manual, Section 5. II. Applicability in Portland. C. a.; and Ref: City of Portland Code of Ordinances Sec. 14-526. Site Plan Standards, (b). 3. b.)*

a. *Basic Standard: Plans and application material should be provided to address erosion and sedimentation requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with MaineDEP Chapter 500, Appendix A, B, and C. The applicant has provided information that the project will be subject to the Basic Standard. The applicant has provided:*

   i. *An Erosion and Sedimentation Control Plan in Section 23 of the application. This item has been reviewed and accepted.*

      Response: Acknowledged

   ii. *Inspection and Maintenance information in Section 23 of the application. This item has been reviewed and accepted.*

      Response: Acknowledged

   iii. *Erosion and Sedimentation Control Details and Notes (C30-07). This item has been reviewed to indicate details for catch basin inlet protection. Given that there will be a level of disturbed surfaces, additional details should include temporary slope stabilization, construction entrances, perimeter erosion controls, dewatering, and other standard erosion and sedimentation details.*

      Response: Additional details including perimeter erosion controls and dewatering filter bags have been added to the plans the detail sheet C30-07. The location for erosion control measures have been added to the Demolition plan Sheet C04-01. Stabilized entrances are provided at the locations of the gated entrances identified on the Construction Management plan. As indicated in the Construction Management Plan, the majority of site disturbance will be internally drained, occurring below grade, behind temporary earth retention walls. Recommended locations for construction dewatering filter locations are indicated on Sheet C04-01.

   iv. *Location of Erosion and Sedimentation Control best practices were not observed on the Demolition Plan or Site Grading Plans. The applicant shall provide this information.*

      Response: The location of erosion and sedimentation control measures has been added to the Demolition plan Sheet C04-01. Stabilized entrances are provided at the locations of the gated entrances identified on the Construction Management plan. As indicated in the Construction Management Plan, the majority of site disturbance will be internally drained, occurring below grade, behind temporary earth retention walls. Recommended locations for construction dewatering filter bag locations are indicated on Sheet C04-01.

b. *General Standard: The applicant has provided information regarding the size and scope of the project indicating the project is subject to the Redevelopment Standard within the City of Portland. It is understood the City's redevelopment standard is more stringent than the Chapter 500 requirements for redevelopment. The City requirements indicate that greater than 50% of the proposed impervious surfaces must receive stormwater quality treatment pursuant to the MaineDEP Chapter 500 requirements. The applicant has provided information that greater than 50% of the facility impervious surfaces are conveyed to a Subsurface Sand Filter. The applicant shall clarify the following and provide responses:*

   i. *The applicant will be required to inspect, maintain, and report on the filter in accordance with the Chapter 32 stormwater requirements. The applicant has provided inspection, maintenance, and housekeeping information in Section 23 of the application. An executed stormwater maintenance agreement is required for the proposed stormwater treatment units.*

      Response: Noted, an executed agreement will be provided upon project approvals.

ii. *A 25% pre-treatment credit has been provided for the subsurface sand filters on Sheet 2 and Sheet 3 of the Underdrained Subsurface Sand Filter calculations. Under Chapter 500 Section 5 (a), Exemptions from the general standards, "The pre-treatment credit does not apply to subsurface underdrained filter structures using chambers." Please clarify how the 25% pretreatment credit is being applied to the proposed Subsurface Sand Filter in these calculations.*

Response: The pretreatment credit has been removed from the calculation sheet. The credit had only been applied to the water quality volume (WQv) calculation for the impervious area associated with the garage rooftop area. The credit reduced the total WQv for the system by about 550 cubic feet. The calculation is presented in the water quality calculations, sheet 3 of 3. A revised Stormwwater Management report dated 10/30/2018 is attached that incorporates the updated WQv calculations without pretreatment credits.

iii. *Please provide additional information on the "HIL" Unit at the existing parking garage, and how it conforms to the pretreatment credit.*

Response: The unit is a 6' diameter Hydro International Downstream Defender treatment unit designed and approved as part of the 2004 campus expansion Site Law approval by the City. The credit has been removed from the WQv calculations.

iv. *The MaineDEP Stormwater BMP manual indicates that, "The surface area of the filter must be no less than the sum of 5% of the impervious area and 2% of the landscaped area draining to the system.". The applicant has asked for a waiver of this principle to allow additional surface flows to be conveyed to the treatment system, as requested by the City. Whereas the magnitude of this difference may be modified as the pre-treatment calculations are revised, this waiver will be reviewed when the pre-treatment volumes have been revised.*

Response: The pretreatment credit was not applied to the surface area criteria. Although the system has been increased in size to meet the treatment volume criteria, a waiver remains required for the surface area criteria.

c. *Flooding Standard: The applicant has provided information indicating the project is required to meet the Flooding Standard of Chapter 500. The applicant has submitted the following:*
   - *Subcatchment Plans for Pre- and Post-Development*
   - *Hydrology computations of these conditions*
   - *Summary of Pre- and Post-Development Flow Rates*

   i. *HydroCAD outputs for the 2-year, 10-year, and 25-year, 24-hour storm events have been provided. The model indicates the post-development flow rates for the proposed project do not exceed flow rates for the pre-development condition.*

   Response: Acknowledged.

   ii. *"Subsurface Sandfilter Section" details match the HydroCAD model. Additional pipe invert, pipe length, and pipe size information on grading plans and details are needed to confirm that the HydroCAD model matches permitting plans.*

   Response: Plan sheet C30-01 has been revised to include additional structure labels. Structure tables and pipe tables with rim elevations, inverts, length and slope of all of the pipes and structures associated with the system are now included on both Sheet

C11-01 and Sheet C30-01. An outlet control structure detail has been added to sheet C30-04.

2. *Discharge to Combined Sewer Overflow (CSO) Locations*
   a. *The applicant has provided information for pre-development and post-development flow rates to the combined sewer system for a 1-inch, 24-hour rain event. This storm event has been mentioned in previous discussions with the applicant and City Department of Public Works (DPW). To ensure that all involved parties are in agreement with evaluating this storm event for the CSO location, please provide e-mail or other written confirmation from City DPW.*

   Response: A confirmation email has been requested from the Keith Gray.

   b. *The Pre-Development and Post-Development HydroCAD reports each indicate multiple inflows to Existing SMH-13952. In Table 2, it appears the pre-development flow rate accounts for only flows from Reach 172, and the post-development flow rate accounts for only flows from Reach 135. Please either provide discussion confirming how the pre- and post-development CSO storm events are represented by the model, or provide revised modeling indicating how the other flows to SMH-13952 are represented.*

   Response: The modeling is correct. Table 2 has been revised. The predevelopment flow at SMH-13952 with contributions from reach 172 and 135 is 1.61 cfs (not 1.34 cfs as initially reported).

   The post development flow at this location is correctly reported as 0.28 cfs which is due primarily to the offsite runoff in reach 135. In the post development condition the detention system reduces the peak flow from the campus at this location to only 0.04 cfs. Therefore the majority of runoff at this location during a 1" storm is from off site locations tributary to reach 135. A revised Table 2 is presented below and is included in the revised report dated 10/30/18. The revised results indicated slightly greater reduction in runoff at this location than previously reported

Table 2 CSO Event Summary Table

Study Point	1"- 24 Hour Type III Storm		
	Peak Runoff		
	Pre (cfs)	Post (cfs)	Diff. (cfs)
ESMH-13952	1.61	0.28	-1.33 (83%)

3. *Connection to Existing System:*
   a. *The applicant shall provide written or e-mail confirmation from the Department of Public Works that proposed connections to existing drainage and sewer systems are being completed in accordance with City of Portland Code of Ordinances section 14-526 (b) 3.a, subsection iii and iv.*

   Response: A confirmation email has been requested from the Keith Gray.

   b. *The applicant has indicated that capacity to serve letters from utilities will be provided as they become available.*

Response: Acknowledged. Capacity to serve letters from utilites will be provided as they are received.

4. *Proposed Drainage Design*
    a. *More information is needed to confirm the pipe capacity and inlet capacity is adequate for each structure and pipe length. Information has been provided in the HydroCAD model, but the information provided in the site grading plans is currently limited.*

Response: Plan sheet C30-01 has been revised to include additional structure labels. Structure tables and pipe tables with rim elevations, inverts, length and slope of all of the pipes and structures associated with the system are now included on both Sheet C11-01 and Sheet C30-01. An outlet control structure detail has been added to sheet C30-04.

    b. *Please provide spot grades or standard details confirming grading at curb and drainage structures.*

Response: Plan sheet C30-01 has been revised to include additional structure labels. Structure tables and pipe tables with rim elevations, inverts, length and slope of all of the pipes and structures associated with the system are now included on both Sheet C11-01 and Sheet C30-01. An outlet control structure detail has been added to sheet C30-04.

5. *Soils:*
    a. *Medium-intensity soil survey indicates Hollis-Windsor-Au Gres soils, but Hinkley soils were reported based on a geotechnical report. This geotechnical report was referenced in Section 23 but was not included as part of this section. Please provide this report, or citation of where the soils information is located in the application.*

Response: The current Natural Resource Conservation Service soil data, obtained from the NRCS web soil survey service indicates that the project area is comprised of Hinkley (HID, HIB) soils.

A copy of the soil survey map of the area is attached in the revised Stormwater management report and is depicted below. The Windsor-Au Gres soils in the vicinity of the MMC campus are located offsite to southwest, in the vicinity of St John Street and Park Street.

Soil Map—Cumberland County and Part of Oxford County, Maine
(Maine Medical Center area)



Map Scale: 1:10,400 if printed on A portrait (8.5" x 11") sheet.

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

b. *Soil groups should be referenced as "hydrologic soil group".*

Response: Noted. A misspelling has been corrected on page 3 of the revised report changing the word "hydraulic" to "hydrologic".

6. *Snow Storage:*
   a. *The applicant has noted in Section 16 of the application that snow storage will be completed through means of removal and off-site storage. No further action is necessary at this time.*

   Response: Acknowledged

7. *Details have been provided confirming the following storm drain infrastructure items that are in conformance with the City Standard Details and Technical Manual:*
   a. *Manhole Frame, Cover*
   b. *Catch Basin Frame, Grate*
   c. *Manhole, Manhole Steps*

   Response: Acknowledged

8. *A catch basin detail was included indicating a 2' sump. Catch basins require 3' sumps per City Technical Manual. Please revise.*

Response: The catch basin details have been revised to include a 3' deep sump.

WRITTEN SUBMISSION 15 – BICYCLE PARKING P
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THE TOTAL NUMBER OF PARKING SPACES SERVING THE CAMPUS IS 3,825 PARKING SPACES, INCLUDING THE ST. JOHN STREET PARKING GARAGE.

REQUIRED BICYCLE PARKING :
20 BIKE SPACES FOR THE FIRST 100 VEHICLE SPACES = 20 SPACES
3,825 TOTAL VEHICLE SPACES – 100 = 3,725 / 1 BIKE PER 20 VEHICLES = 186 BICYCLE SPACES
TOTAL REQUIRED BICYCLE SPACES - 20 + 186 = 206 SPACES

BICYCLE SPACES PROVIDED :
PER THE IDP PAGE 58 THERE ARE 193 SPACES ON CAMPUS
40 ADDITIONAL SPACES ARE PROPOSED AT THE ST. JOHN STREET PARKING GARAGE
TOTAL PROPOSED BICYCLE SPACES = 193 + 40 = 233 SPACES

THE APPLICANT IS CURRENTLY EVALUATING ON CAMPUS BICYCLE PARKING PER THE CONDITIONS OF APPROVAL FOR THE EAST TOWER AND VISITOR GARGE EXPANSIONS.

From: Bruce Hyman <bhyman@portlandmaine.gov>
Sent: Tuesday, October 23, 2018 4:08 PM
To: Chris Chop <CChop@mmc.org>
Cc: Helen Donaldson <hcd@portlandmaine.gov>
Subject: Re: Bike Rack Suitability

This message originated outside of MaineHealth. Use caution when opening attachments, clicking links or responding to requests for information.

Hi Chris,

Chatting briefly with Nell about your email, we would find these acceptable for a yet-to-be determined percentage of the bike parking to be provided on campus. As you can imagine, we'll want to know: where in the garage; how many; how accessible and visible it is; who the intended users are (visitors, employees, etc); and, what the distribution and type of bike parking is as part of your overall campus bike parking plan.

Thanks for checking in - we appreciate being able to chime in at good check-points in the process.

Best regards,

Bruce

On Tue, Oct 23, 2018 at 2:52 PM Chris Chop <CChop@mmc.org> wrote:

Bruce and Nell:

I hope you all are doing well.

We are exploring options for additional bike parking and identified the Dero Ultra Space Saver as a potentially good option for our patient/visitor parking garage (outside public ROW) because it could give us 45 spaces (compared to only 15 spaces if using the classic "inverted u" style). Does this style seem appropriate to you? I've seen it used in some of the newer buildings around town, like in some of the East End condos.

Thanks!

Chris Chop, AICP
Commuter Choice Program Manager
131 Chadwick Street, Portland ME 04102
Maine Medical Center
207-662-4120

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--
Bruce Hyman
Transportation Program Manager
Transportation Division

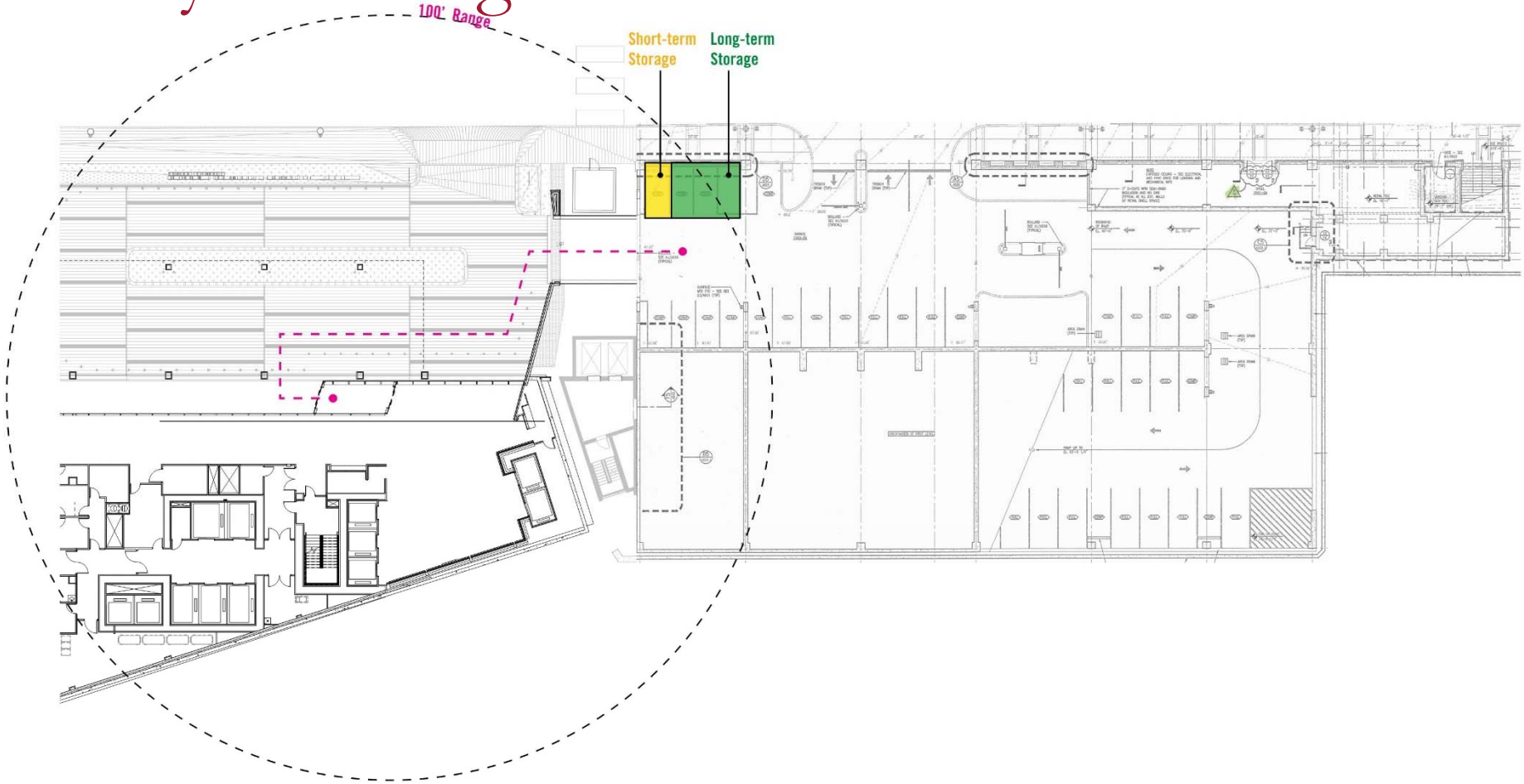
Department of Planning & Urban Development
389 Congress Street
Portland, Maine 04101
(207) 874-8717 phone

bhyman@portlandmaine.gov
http://www.portlandmaine.gov/1363/Transportation-Division
Yes! Transportation's Good Here ....

Notice: Under Maine law, documents - including e-mails - in the possession of public officials or city employees about government business may be classified as public records. There are very few exceptions. As a result, please be advised that what is written in an e-mail could be released to the public and/or the media if requested.



Bicycle Storage



Act with kindness and compassion.

Be an active listener.

Be a role model.

Set high standards.

Take responsibility.

Embrace change.

Jeff Keilman,
Senior Project Manager,
Perkins+Will

PP

November 27, 2018

Maine Medical Center
MaineHealth

Nell Donaldson, Senior Planner
City of Portland Planning Division
389 Congress Street
Portland, ME 04101

Re: MMC Congress Building| 22 Bramhall St| Level III Site Plan
Response to City Reviewer Comments 2

Dear Nell:

Thank you for coordinating the review of the Maine Medical Center Congress Building project located at 22 Bramhall with frontage on Congress St.. This letter provides a summation of our responses to the comments received from various reviewers as part of the Level III Site Plan process. The original comment in italics below, and our response follows each.

Comments from City of Portland Traffic Consultant – Tom Errico, TY Lin Dated November 9, 2018

1. I generally find the methods used in the development of the base traffic volumes to be reasonable and acceptable. It should be noted that the volume timeframe for the analyses was the peak hour of the roadway system, which does not correspond to employee peaking in the morning (employees arrive before the peak hour). The Applicant should provide documentation noting traffic volumes on roadways during both the peak hour of the system and peak hour of traffic generation from MMC.

   Response: The following table compares the total entering volumes at the key intersection of St. John Street with Congress Street during both the peak hour of adjacent street traffic and the peak hour of MMC. The traffic volumes for the adjacent street traffic are based on the 2023 Postdevelopment volumes from the TIS for Phase 3. The traffic volumes for the peak hour of MMC traffic generation are based on the 2022 Postdevelopment traffic volumes from the memo dated June 19, 2018 for the proposed St. John Street parking garage (Phase 2) that have been adjusted to the Phase 3 build out year of 2023.

Intersection	Adjacent Street		Peak Hour MMC	
	AM	PM	AM	PM
St. John / Congress	2,271	2,413	1,795	2,499

   As shown in the table, the AM peak hour of the adjacent street traffic volumes (approximately 7:30-8:30 AM) are higher than the AM peak hour of the generator (approximately 6:00-7:00 AM). The PM peak hours are similar, since the PM peak hour of the generator and PM peak hour of the adjacent street occur at approximately the same time for this intersection (start time between 4:00 and 4:30 PM). Since the AM traffic is higher during the adjacent street time period and the PM traffic is approximately equal, to be conservative, the adjacent street traffic was use for analysis

2. The Trip Generation estimate was based upon ITE methods and I find the estimate to be reasonable and meets MaineDOT TMP requirements.

   Response: Comment acknowledged.

3. The Trip Assignment of trips was based upon both localized turning movement volumes and MMC employee information. I find the methods used to be reasonable.

Response: Comment acknowledged.

4. The Park Avenue/Valley Street intersection is a High Crash Location. The Applicant shall provide specific recommendations with implication of such changes for review and consideration.

   Response: In the Traffic Impact Study, it was identified that the one crash pattern at this intersection involves left turning vehicles from Valley Street colliding with westbound Park Avenue vehicles. To address this pattern, we recommend restricting left turns from Valley Street. An additional review of the police reports showed that a contributing factor of one of the crash pattern collisions was limited sight distance due to a snowbank on Valley Street. Additional winter maintenance is recommended. It should be noted that the proposed expansion traffic is not expected to exacerbate the existing crash pattern.

5. The Congress Street/Gilman Street intersection is a High Crash Location. The Applicant suggests that the future removal of the traffic signal at Congress Street/Valley Street may mitigate crashes. I continue to review this, but a monitoring requirement post signal conditions may be suggested.

   Response: Comment acknowledged. Awaiting further comment.

6. The St. John Street/A Street is a High Crash Location. The Applicant suggests that traffic volume reductions may mitigate crashes. The new employee parking garage will increase traffic volumes in the area and may negatively impact conditions. I continue to review this, but a monitoring requirement after the employee parking garage is open may be suggested.

   Response: Comment acknowledged. Awaiting further comment.

7. Park Avenue/St. John Street is a High Crash Location. The Dunkin Donuts project on St. John Street will likely be implementing improvements to the northbound St. John Street approach. The DD scope of this work is not expected to mitigate all crash patterns. The Applicant shall specifically recommend strategies for mitigating all crash patterns that are correctable by improvements.

   Response: It is the understanding of GP that the DD mitigation items are anticipated to mitigate the northbound St. John Street crash patterns. The crash pattern that remains is westbound Park Avenue vehicles running a red light and colliding with northbound St. John Street vehicles. To aid in potentially reducing this type of crash, GP recommends the traffic signal heads be fitted with backplates that have retroreflective boarders and that the timing of the yellow interval be field reviewed and extended if necessary.

8. Valley Street between and A Street and C Street is a High Crash Location. The Applicant noted at the TMP Scoping Meeting that traffic volumes will be declining on Valley Street in this area and thus may reduce collisions. The Applicant shall document specific before/after traffic volumes changes on Valley Street as part of assessing mitigation of crash rates.

   Response: Recent counts are not available for this segment of Valley Street since it was not identified as part of the study area for in-depth analysis. However, as shown in the Traffic Impact Study on Figure 9, "Net Impact Phase 3" no impacts on this segment of Valley Street are forecast due to the proposed Phase 3 expansion. Additionally, as shown on Figure 15 in the Traffic Impact Study, "Net Impact due to Proposed Employee Garage" there is forecast to be a decrease of traffic through that section of Valley Street of 103 trip ends during the AM peak hour and 71 trip ends during the PM peak hour.

9. The Congress Street/St. John Street intersection is not a High Crash Location but experienced 25 crashes over the reported three-year period. The Applicant shall conduct a safety review of the intersection.

   Response: To better evaluate this location and identify correctable crash patterns, the police reports provided by MaineDOT were used to create a collision diagram (provided in the Traffic Impact Study). Based on a review of the collision diagram, there are two crash patterns at the intersections; rear end collisions on St. John Street northbound and rear end collisions on St. John Street southbound. These may be mitigated with adjustments to the clearance times of the intersection. It should be noted that this intersection is proposed to be modified as part of the Dunkin' Donuts project mitigation, which may impact any crash patterns. In addition, the phasing of this intersection is proposed to be converted from exclusive pedestrian phasing to concurrent pedestrian phasing which is expected to improve the operations of the intersection.

10. Congress Street is a High Crash Location between Forest Street and Weymouth Street. To assess potential mitigation strategies, I conducted a review of police reports. The Applicant has suggested the provision of a three lane roadway with a center left-turn lane. There were 10 crashes reported over the most recent three-year period with a Critical Rate Factor of 1.45. The following summarizes each reported collision.

    - January 10, 2015 at 8:40pm – Vehicle struck bicyclist in slushy roadway conditions. (Crash not likely to be mitigated with center turn lane)
    - May 11, 2015 at 4:35pm – A vehicle pulled over for an ambulance and was struck when re-entering travel lane. (Crash not likely to be mitigated with center turn lane)
    - June 1, 2015 at 4:55pm – Rear End Collision eastbound. During a congested time period a motorist applied vehicle brakes, but mechanical problems prevented an immediate stop. Not related to a turning movement (Center turn lane not likely to mitigate this crash)
    - August 12, 2015 at 3:02pm – Rear End Collision westbound. Drive Inattention. (Crash may be mitigated with center turn lane)
    - January 7, 2016 at 4:28pm - Rear End Collision eastbound. Drive Inattention during congested traffic period. (Unknown if related to a turn movement. Given time of day it may be related to congested traffic conditions. Crash may be mitigated with center turn lane)
    - September 27, 2016 at 10:36am – Westbound vehicle collided with parked vehicles near Weymouth Street. Drive error was likely contributing factor. (crash not likely to be mitigated with center turn lane)
    - January 4, 2017 at 1:50pm - Rear End Collision eastbound. Drive Inattention. (Unknown if related to a turn movement. Crash may be mitigated with center turn lane)
    - April 19, 2017 at 8:01am - Rear End Collision eastbound. Drive Inattention. (Unknown if related to a turn movement. Crash may be mitigated with center turn lane)
    - June 20, 2017 at 8:00am - Rear End Collision with right-turning vehicle. Drive Inattention. (Crash not likely to be mitigated with center turn lane)
    - September 25, 2017 at 8:20pm – Turning Collison Failed to yield right of way. (Crash not likely to be mitigated with center turn lane)

    Based upon my review of the data, at most 50% of the crashes could be mitigated with the introduction of a center turn lane. I would note again that some of the rear end collisions may not have been related to a left-turn movement, but to congested dense slow-moving vehicle conditions. The center turn lane would not mitigate those crashes. City staff is concerned about changing the roadway context of Congress Street (particularly in comparison with nearby in-town Congress Street conditions) and how it has the potential for dangerous increased vehicle speeds. I would note that the Applicant's traffic simulation model of Congress Street in this area depicts a roadway with little to no vehicle delay suggesting limited turning vehicle conflict opportunities. Lastly, it is my professional

opinion that this section of Congress Street will change contextually when the project is completed, functioning more like an urban street (similar to in-town Congress Street), due to changes to the building activity, enhanced streetscape, increased pedestrian/bicycle activity, slower vehicle speeds, thus creating a Complete Street serving all users. In my professional opinion this change to a Complete Street would result in safe conditions for all users.

Response: The MMC Team is working with City Staff on a design for the corridor that is intended to enhance safety along this section of Congress Street. This design is being refined.

11. Traffic Movement Permit regulations requires Applicants to document incremental changes to a site over the prior 10 years to determine factors that have influenced traffic generation from the site. In my professional opinion, the Applicant has not provided documentation that adequately addresses historical changes at MMC.

    Response: The 10 year history was described in the TIS under "Previously Approved Expansions". A supplemental description was also submitted by MMC to the City under separate cover.

12. The Applicant shall provide specific sight distance measurements at the Congress Street/Drop-Off driveway according to Site Plan information.

    Response: The speed limit on Congress Street along the site frontage is 25 mph. MaineDOT and the City require an available sight distance of 200 feet. Based on a field review, the available sight distances exiting the site looking left and right exceed 300 feet in each direction. In addition, proposed MMC sign locations have also been reviewed and will be outside of the public right of way and are not proposed within the sight triangle. When evaluating the sight distance, consideration was also given to potential roadway changes along Congress Street as described previously. A diagram illustrating the site triangles will be included in an updated sign plan submission.

13. The Park Avenue/St. John Street intersection has improving levels of service and delay following project build-out. The Applicant should specifically note any traffic signal equipment modifications that are needed to accomplish the noted optimization.

    Response: There are no traffic signal equipment modifications that are needed to accomplish the optimization. The optimization was completed by maintaining the existing signal phasing and adjusting the green time for each approach. GP recommends that once the hospital expansion is completed and occupied, the signal timing be field adjusted during peak hours of adjacent street traffic.

14. The Commercial Street/Valley Street intersection has improving levels of service and delay following project buildout. The Applicant should specifically note any traffic signal equipment modifications that are needed to accomplish the noted optimization.

    Response: There are no traffic signal equipment modifications that are needed to accomplish the optimization. The optimization was completed by maintaining the existing signal phasing and adjusting the green time for each approach. GP recommends that once the hospital expansion is completed and occupied, the signal timing be field adjusted during peak hours of adjacent street traffic.

15. I continue to review traffic model output for vehicle queuing and will provide comments in the future.

    Response: Comment acknowledged. Awaiting further comment.

16. The Congress Street/St. John Street intersection was modeled assuming existing roadway conditions. The Applicant shall also conduct an analysis assuming the Dunkin Donuts improvements on St. John Street are implemented (converting St. John Street from four lanes to three lanes).

Response: GP completed capacity and queue analyses for the 2023 AM and PM postdevelopment volumes with the geometry shown on the mitigation plan for Dunkin' Donuts dated September 25, 2018, provided by Bruce Hyman. This plan proposes revised intersection geometry at the intersections of Congress Street with St. John Street and Park Avenue with St. John Street. The timing at the two intersections has been optimized. The following table summarizes the results of the capacity analysis for the two intersections. The levels of service criteria are the same as those listed in the Traffic Impact Study.

Capacity Analysis Results Summary – Using DD Lane Uses

Approach	Level of Service	
	2023 AM Post	2023 PM Post
Congress / St. John		
Congress EB	C	C
Congress WB	B	C
St. John NB	D	D
St. John SB	C	C
Overall	**C**	**C**
Park / St. John		
Park WB	C	D
St. John NB	C	C
St. John SB	C	C
Overall	**C**	**C**

As shown in the table, both intersections are forecast to operate at acceptable levels of service.

The following table summarizes the results of the queue analysis, rounded up to the nearest five feet:

Queue Analysis Results Summary – Using DD Lane Uses

Approach	Storage Length (ft)	95th Percentile Queue Length	
		2023 AM Post	2023 PM Post
Congress / St. John			
Congress EB L		405	250
Congress EB T		690	405
Congress EB R	290	360	155
Congress WB L	80	90	95
Congress WB R		110	155
St. John NB T		370	675*
St. John NB R	175	150	240
St. John SB L	100	140	130

St. John SB T		220	260
Park / St. John			
Park WB L	95	135	175
Park WB T	95	180	270
Park WB TR		205	450
St. John NB L	175	200	250
St. John NB LT		295	740
St. John NB R	110	170	180
St. John SB LT		330	215
St. John SB R	55	105	100

*The queue length for this lane is forecast to extend past the adjacent intersection of St. John Street with Margarita's Driveway. Further discussion below.

As shown in the table, overall the 95th percentile queue lengths are forecast to exceed the available storage lengths by 2-3 vehicles, assuming a vehicle and the associated space between vehicles is 25 feet. The 95th percentile queue lengths of the Park Avenue westbound through lane are forecast to exceed the available storage length by 7 vehicles during the PM peak hour. Additionally, the 95th percentile queue length St. John Street northbound through lane at Congress is reported to be 675 feet during the PM peak hour. The queue was observed to extend past the intersection of St. John Street with Margaritas, which indicates that the actual 95th percentile queue length is longer than the reported 675 feet. The queue length may be reduced by adjusting the intersection timing, however it would be at the expense of the operation of other approaches.

17. The Applicant shall recommend pedestrian and vehicle improvements at the Congress Street/Valley Street intersection during post-traffic signal conditions.

    Response: The MMC Team is working closely with City Staff on the design of Congress Street along the site frontage and immediate intersections such as Congress Street / Valley Street.

Comments from Fire Department – Robert Thompson, Division Fire Chief Dated October 31, 2018

18. Here's the standard for Fire Department access.
    - Largest Fire Department Vehicle must be able to navigate through the parking lot to access building.
    - Fire Department access shall have an unobstructed vertical clearance of not less than 13 ft. 6 in.
    - Vertical clearance shall be permitted to be reduced, provided such reduction does not impair access by fire apparatus, and approved signs are installed and maintained indicating the established vertical clearance when approved.

    Response: Design conforms to required standards. New Connector Bridge over Service/Crescent Drive will be 13'-6" at a minimum allowing for access to Congress St. and Bean Buildings.

19. Because the drop off area is, for the most part, under the structure, I'd approve the 12 ft. clearance if signage indicating the clearance at the entrance of the drop off area is provided with a sign indicating passenger vehicles only.

    Response: The drop-off area consists of (2) levels of soffit and in turn differencing clearance. MMC is working with design consultants to ensure proper signage for passenger vehicles. The lower height immediately adjacent to the entry vestibule is approximately 10'-0" clear which is above required clearances for American Emergency Vehicles (ambulances) and associated ADA Access for Vans.

The larger height that covers the majority of the drop-off is 20'-0" clear. Fire department access will be best served from along Congress St., Gilman St., or Crescent St. providing coverage to all sides of the building.

20. Also, considering the location of the sprinkler room and fire pump room, the fire department connections shall not be located where fire department hose may block, or impede, egress. If the fire department connections are in the drop off area the required height will be 13 ft. 6 in. If the connections are on the Gilman Street side, near the fire pump room, they would have to be away from the exit stairs at the exit discharge.

    Response: Fire Department connections and test headers are on Gilman directly outside of the Fire pump room. These are south of the egress stairs and not in the path.

Comments from Department of Public Works – Jeremiah Bartlett, Transportation Systems Engineer Dated November 8, 2018

21. I concur with Tom's comments. In particular, I share concerns with the non-urban nature of a three-lane cross section fronting MMC and implications for vehicle speed, as well as a need to evaluate and recommend future pedestrian accommodations with an unsignalized Congress at Valley.

    Response: Acknowledged.

Comments from Parks, Recreation & Facilities Department – Jeff Tarling, City Arborist Dated November 1, 2018

22. Wanted to see if we could meet up or we can discuss via email the tree and landscape plan for the Maine Medical Center project. We would like to see when possible a higher degree of 'native' plant types in our city landscapes. The use of 'native' plants and we know that this is a general term, should fit well into the overall MMC goal. Tree and landscape values could be an theme for MMC and future project that consider landscape greenery and how it relates to human health and well being.
    - The web links below are interesting background information:
    - http://lhhl.illinois.edu
    - http://www.naturewithin.info/New/ISA_prcdngs.Ecosystem_Social_Capital_Wolf.pdf
    - http://www.naturewithin.info/UF/PsychBens-FS1.pdf

    Response: The MMC landscape architect has attempted to contact the City Arborist to discuss this comment. The City Arborist has not been available since this comment was received.

23. Street trees - knowing that the project frontage will have a bus stop and bring in a tall vehicle close to the curb, a more upright cultivar of Honeylocust like the 'Streetkeeper' might be a good selection. 'Princeton' or 'Accolade' Elm could work as well. The web links below offer some comparison values on the attributes that can help select what works best for this site. (Open to other suggestions also)
    - http://www.jfschmidt.com/introductions/streetkeeper
    - http://www.mortonarb.org/trees-plants/tree-plant-descriptions/accolade%E2%84%A2-elm
    - http://www.mortonarb.org/trees-plants/tree-plant-descriptions/princeton-elm
    - http://www.jfschmidt.com/introductions/streetkeeper
    - http://www.streetkeeper.net

    Response: The street trees on Congress Street will be specified as 'Streetkeeper' Honeylocust.

24. New England Native Plant suggestions - There could be options in this phase to consider woody and herbaceous plant options....

- https://extension.umaine.edu/gardening/manual/plants-for-the-maine-landscape
- https://wildseedproject.net/comprehensive-plant-list/

Response: The MMC landscape architect will discuss this comment with the City Arborist.

Comments from City Surveyor, William Scott, City Surveyor Dated October 31, 2018

25. A note should be added to Sheet 2 of the EC plan that defines the elevation datum for this project. It was listed as NAVD88 on the 2009 version of these plans.

    Response: The requested note has been added to Sheet 2.

26. A note should also be added to Sheet 2 of the EC plan and to both of the Utility Plan sheets that warns people that this elevation datum (NAVD88) is not the same as "City Datum" (NGVD29). A conversion formula should also be noted.

    Response: The requested note has been added to Sheet 2 and the Utility Plans.

27. A note should be added to the EC plan that refers the reader to the Utility Plan sheets for sewer and drain pipe invert elevations, sizes and materials.

    Response: The requested note has been added to the EC Plan.

28. State Plane coordinate pairs should be labeled for at least two of the property corners on the EC plan.

    Response: State Plane coordinate pairs have been added to two property corners along Congress Street.

Comments from City's Sewer & Stormwater Consultant, Wright Pierce Dated November 8, 2018

1. Level III Site Plan applications with the City of Portland must submit a stormwater plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules. This includes conformance with the Basic, General, and Flooding Standards (Ref: Technical Manual, Section 5. II. Applicability in Portland. C. a.; and Ref: City of Portland Code of Ordinances Sec. 14-526. Site Plan Standards, (b). 3. b.)
    1. Basic Standard: Plans and application material should be provided to address erosion and sedimentation requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with MaineDEP Chapter 500, Appendix A, B, and C. The applicant has provided information that the project will be subject to the Basic Standard. The applicant has provided:
        1. Erosion and Sedimentation Control Details and Notes (C30-07). This item has been resubmitted with additional details including temporary slope stabilization, construction entrances, perimeter erosion controls, dewatering, and other standard erosion and sedimentation details. This item has been reviewed and accepted.

           Response: Acknowledged.

        2. Location of Erosion and Sedimentation Control best practices have been indicated on Sheet C04-01. This item has been reviewed and accepted.

           Response: Acknowledged.

2. General Standard: The applicant has provided information regarding the size and scope of the project indicating the project is subject to the Redevelopment Standard within the City of Portland. It is understood the City's redevelopment standard is more stringent than the Chapter 500 requirements for redevelopment. The City requirements indicate that greater than 50% of the proposed impervious surfaces must receive stormwater quality treatment pursuant to the MaineDEP Chapter 500 requirements. The applicant has provided information indicating that greater than 50% of the project's impervious surfaces, and greater than 50% of the total developed area, are conveyed to a Subsurface Sand Filter. The applicant has removed pretreatment credits that were included in the initial submission calculations, including the HIL unit credit. The applicant shall clarify the following and provide responses:
    1. The applicant will be required to inspect, maintain, and report on the filter in accordance with the Chapter 32 stormwater requirements. The applicant has provided inspection, maintenance, and housekeeping information in Section 23 of the application. The applicant has indicated that a stormwater maintenance agreement will be provided for the proposed stormwater treatment units upon project approval.

       Response: Acknowledged.

    2. The MaineDEP Stormwater BMP manual indicates that, "The surface area of the filter must be no less than the sum of 5% of the impervious area and 2% of the landscaped area draining to the system.".
        1. The applicant has asked for a waiver of this principle to allow additional surface flows to be conveyed to the treatment system, as requested by the City.

           Response: Acknowledged

        2. The revised calculations indicate that the proposed sand filter surface area is approximately 80% of the minimum required surface area. The applicant shall provide an understanding of how providing less than the minimum surface area is anticipated to impact TSS, nutrient loading, temperature, and other stormwater loading criteria.

           Response:

           As we presented to the Planning Board on November _ 2018:

           The stormwater system presented in the application has been designed to provide treatment for all of the areas required under the City's Ordinance and the Chapter 500 rules. The system was expanded at the City's request to add capacity to the extent practicable to detain and treat runoff from the existing Visitor's Garage. It is our opinion that the system as designed will not create a negative impact on TSS removal, nutrient loading or temperature in receiving waters based on several factors specific to this project.

           Based on the City/Chapter 500 standards, the site is required to treat 0.8 acres of developed area. The system provides treatment for approximately 1.95 acres of developed area (approximately 2.5 times the required area).

The system as designed provides approximately 80% of the surface area required based on the expanded tributary area. The system's pretreatment (isolator row) is oversized by approximately 17% to provide added pre-treatment to compensate in part for a reduced footprint. The Visitors' Garage includes an existing hydrodynamic separator unit which provides additional pre-treatment that is not accounted for in the sizing criteria.

We also note that the MDEP Chapter 500 surface area criteria is based solely on the tributary impervious and landscaped area, requiring an area equal to 5% of the tributary impervious area and 2% of tributary landscaped areas. This criteria does not differentiate between high pollutant load impervious area such as high turnover parking or gravel surfaces compared to lower pollutant load areas such as rooftops. Presumably the standard is conservative, assuming all impervious areas are higher TSS/pollutant load sources. For this project, the anticipated TSS/pollutant load is expected to be lower than an average site.

Approximately 55% of the impervious area tributary to the system is rooftop reducing potential pollutant load.

The garage parking surface comprises only 31% of the impervious area treated. Runoff from this area is pre-treated by the existing separator unit and the oversized isolator row.

The entrance plaza area tributary to the system is planned as heated concrete requiring limited sand and salt applications further reducing potential pollutant load.

The system storage and release rate is designed to maximize the detention of rainfall events up to1". The entire volume of this storm is released through the filter surface at a minimal discharge rate extending over a 24 hour period mitigating temperature impacts.

These smaller, "first flush" storms typically account the majority of a watershed's annual pollutant load. At this site, the runoff from these first flush events is conveyed by combined sewer to the wastewater treatment plant prior to discharge to Casco Bay, further mitigating TSS and temperature concerns with a smaller footprint.

The site is located with a watershed that is tributary to an entirely closed drainage system, tributary to either the treatment plant during small storms or directly to Casco Bay during a CSO event. Runoff is not tributary to any freshwater stream, wetland or pond where temperature is a more significant concern.

Based on these factors it is our opinion that the system will function as intended with are reduced surface area.

3. Flooding Standard: The applicant has provided information indicating the project is required to meet the Flooding Standard of Chapter 500. The applicant has submitted the following:
    - Subcatchment Plans for Pre- and Post-Development
    - Hydrology computations of these conditions

- Summary of Pre- and Post-Development Flow Rates

1. HydroCAD outputs for the 2-year, 10-year, and 25-year, 24-hour storm events have been provided. Applicant has provided additional pipe and structure detail to confirm that plan and design information matches model information. The model indicates the post-development flow rates for the proposed project do not exceed flow rates for the pre-development condition, and therefore meets the flooding standard.

   Response: Acknowledged

2. Discharge to Combined Sewer Overflow (CSO) Locations
    1. The applicant has provided information for pre-development and post-development flow rates to the combined sewer system for a 1-inch, 24-hour rain event. This storm event has been mentioned in previous discussions with the applicant and City Department of Public Works (DPW). The applicant has requested written confirmation from City DPW to ensure that all involved parties agree with evaluating this storm event for the CSO location. This confirmation will be provided as it becomes available.

       Response: Acknowledged

    2. Table 2, generated from HydroCAD reports, has been updated by the applicant to compare pre-development and post-development flow rates in a 1-inch rain event. These modifications indicate that the post-development conditions result in a reduction in flows and flow rates when compared to the pre-development condition.

       Response: Acknowledged.

3. Connection to Existing System:
    1. The applicant has asked for a written or e-mail confirmation from the Department of Public Works that proposed connections to existing drainage and sewer systems are being completed in accordance with City of Portland Code of Ordinances section 14-526 (b) 3.a, subsection iii and iv. The applicant has indicated that this confirmation will be provided as it becomes available.

       Response: Acknowledged.

4. Proposed Drainage Design
    1. Additional information has been provided on Sheet C30-01, C11-01, C40-01, and C30-04 to indicate site grading and pipe information. The following shall be clarified:
        1. SD-2 References two different pipes. Please clarify.

           Response: Pipe labels have been revised to clarify that the two pipes as SD-2 and SD-2.1

        2. SD-3 is a 12-inch pipe that accepts flow from a 15" pipe and conveys flow to a 15" pipe. Please revise or indicate the need for this size change.

           Response: The pipe labels have been clarified. SD-3 is a 15" pipe that receives flow from a 15" upstream pipe. SD-3.1 is a 12" pipe that is the outfall from CB-3 with no upstream tributary pipe.

3. Several of the slopes indicated in the "STORM DRAIN PIPE DATA" table do not match the slopes calculated from the invert and length data indicated in the "STORM DRAIN STRUCTURE DATA" table. Please revise.

   Response: The discrepancies appear to be related to rounding the length of the pipes and the precision of the slope value reported in the pipe tables. The length of pipe in the tables were rounded to the nearest whole foot measured from inside face to inside face of the structures. The slope calculation in the tables was calculated without rounding on a center-to-center of structure length. On short pipes this can result in the noted apparent discrepancies. The inverts on the structure tables are correct.

   The pipe tables have been revised to reduce the precision of the reported slope and to calculate the slope of the pipe based on an inside face-to-inside face dimension. Some small variations may remain, based on rounding up pipe lengths to a whole foot.

4. A 1% cross-slope is shown for the sidewalk locations of Congress Street, whereas the technical manual indicates a 2% cross-slope. Please indicate why a 1% cross-slope is being proposed or revise.

   Response: The cross slope grade in the Technical Manual is a maximum allowable grade. The selected 1% grade is appropriate with the 5.5% longitudinal slope along Congress Street.

2. Isolator row detail on C30-04 indicates a 12" maximum inlet pipe. Please confirm with manufacturer if this inlet is large enough facilitate maintenance/cleaning access to the isolator row.

   Response: The detail callout has been revised to 24" based on the size of the chamber specified. A 12" pipe size is a typical size for this system and is adequate for the water jet/vacuum equipment used to clean the isolator rows.

3. An updated catch basin detail with a 3' sump has been submitted. No further action necessary.

   Response: Acknowledged.

4. Additional spot grades have been provided to confirm grading at curb and drainage locations. Locations and details of granite headstone curb and gutterline "dishpan" grading at catch basins should be provided on construction documents for clarity.

   Response: Typical City standard curb inlet and gutter grade details have been added to the detail sheets. The headstone details are only applicable to catch basins in the public right of way that may be reset at the corner of Gilman Street and Congress Street as part of a the revised streetscape plan This plan is currently in progress and under review by the City. Callouts related to these structures will be included in a subsequent submission.

   Catch basins in the private plaza areas are placed against sloped curbs along tipdowns or are installed as area drains, they do not include a headstone.

5. Soils: The applicant has provided information from an NRCS Web Soil Survey indicating the proposed soils. No further action necessary.

Response: Acknowledged.

6. Additional Utility Infrastructure:

    1. Electrical and Communications Infrastructure
        1. Electrical and Communications manholes, pull boxes, and duct banks are proposed. Details were provided for utility manholes. Utility duct bank details were not observed on the proposed details. Please provide information or details on duct bank size and material; and approximate duct bank elevations in locations where utility crossings are proposed.

            Response: Utility duct banks will be constructed meeting CMP standards. A typical duct bank detail with minimum cover requirements have been added to the plans.

            A duct bank schedule identifying conduit count is presented on the utility plans.

            Maine Medical Center is currently coordinating the final number of conduit in each duct bank with the utility providers and seeking to reduce the number of required private MMC owned conduit by using existing conduit on the Medical Office building bridge. More specific duct bank details can be provided in subsequent submittals if required.

        2. A transformer is scheduled to be removed on the Demolition Plan under item U-4. Please confirm if the transformer is to be relocated, as well as the location of any new transformer. Above-ground utility infrastructure shall be sited and screened in accordance with City standards.

            Response: There are no transformers scheduled to be removed. The Demolition Plan Sheet C04-01 has been revised so that callout U-4 now reads "NOT USED". An existing pole mounted transformer on Pole #6.5 serves MMC buildings and is to be removed by CMP prior to the project.

    2. Sewer Infrastructure
        1. Sewer manhole, steps, frame and cover details, as well as pipe slopes, have been included on Sheet C11-01 and C30-03. Pipe design and slopes and in accordance with the City of Portland Technical Manual.

        Response: Acknowledged

    3. The applicant has indicated that capacity to serve letters from utilities will be provided as they become available. This may be considered a condition of approval for the project.
        1. The Capacity to Serve process will require a level of coordination between the applicant and utility companies and typically includes compliance with applicable utility standards and details. Central Maine Power and Consolidated Communications should review the plan and verify the depiction of changes to primary electrical and communication lines, respectively.
        2. Modifications to utility layout and design from the capacity to serve process shall be confirmed by the City prior to construction.

        Response: Acknowledged. Coordination of the overhead utility relocations with the utility providers is ongoing. The location shown on the current plans is generally accepted. Remaining coordination is related to the final number and size of conduit required.

Comments from Planning Department, Helen Donaldson, Received November 9, 2018 and supplemented on November 16, 2018

Transportation:

1) Impact to Surrounding Street Systems: There are a number of places in the application where the old employee trip gen figures are being cited still, and thus the trip generation is not figures are incorrect. Please review and revise.

   Response: Based on discussions at the meeting held on November 19, 2018, it was identified that further review of trip generation numbers in the TIS is required. GP has reviewed and revised numbers that were based on previous evaluations and adjusted the TIS accordingly.

2) Access and Circulation:
   a. Further discussion on the street layout pending. At the least, a climbing bike lane should be shown on Congress Street.
   b. The Congress Street sidewalk should be widened as possible to provide better pedestrian access along the site frontage
   c. Gilman sidewalk waiver is not supported by staff or the consulting traffic engineer. Please show this sidewalk on revised plans.
   d. Congress Street curbline still under review, pending additional discussion with DPW.
   e. Revise ramps as described by others.
   f. Move crosswalk to west side of Forest, proximate to bus shelter

      Response: The MMC Team is working closely with City Staff on the design of Congress Street along the site frontage and immediate intersections such as Congress Street / Valley Street.

   g. Provide additional information on mechanical areaway as well as electrical infrastructure in the Gilman ROW.

      Response: Mechanical areaway was conceived of as a flush hatch within the sidewalk that would allow for very rare equipment replacements required during the life of the building. Subsequent to the submission, the design team has reassessed means and methods and have found the ability to remove panels on the building to allow for replacement, keeping this necessary function completely on MMC property.

3) Public Transit Access: Please show shelter on south side of Congress in revised plans, as well as stop on north side of Congress.

   Response: A shelter on the south side and a stop on the north side of Congress St will be included in revised drawings.

4) Parking: Please clarify how bicyclists will know how to access the bicycle parking.

   Response: The primary users of the bicycle facilities adjacent to the Congress St entrance are expected to be employees and staff who will be familiar with the location and use of those facilities. For the occasional non-employee, there will be wayfinding signs visible to both on-street bicyclists as well as those who used the drop off area to identify how to access the bicycle parking. In addition, the valets will be able to direct bicyclists as needed should they not see the signs.

Environmental Quality

5) Landscaping and Landscape Preservation:
    a. Provide street trees on Gilman St.

        Response: Acknowledged. Street trees will be added to Gilman St.

    b. See comments from others.
    c. Install curb at ROW line on Congress St. planting bed

        Response: Acknowledged.

    d. Further discussion pending on rounded tree wells.

        Response: Please see response to joint design comment at the end of this document.

    e. Clarify street trees on Gilman Street and make sure plans are coordinated

        Response: MMC's landscape architect is awaiting a return call from the City's arborist.

Public Infrastructure and Community Safety

6) Public Safety and Fire Prevention:
    a. Further review of islands at driveway pending from Fire.
    b. Please verify vertical clearances within the turnaround area.
    c. Further review of islands at driveway pending from Fire

    Response: Acknowledged, awaiting further comment. Please review responses to comments from the Fire department earlier in this document.

7) Availability and Adequate Capacity of Public Utilities: Please clarify extent of utility infrastructure in Gilman Street ROW, particularly electrical infrastructure?

    Response: Response pending.

Site Design

8) Exterior Lighting:
    a. Lighting plan requires waiver from TM re maximum and average illumination levels.
    b. Show correct profile of lights on site plan and doublecheck to make sure that site plan matches others.

        Response: Please clarify waiver determination.

9) Signage and Wayfinding:
    a. Please provide revised sign plan per prior comments.
    b. Provide sight line analysis.

    Response: A revised sign master plan has been submitted.

10) Zoning Related Design Standards: Please provide rendering of main entrance from ground plane if possible.

    Response: Image submitted.

Other Submittals Required

11) Please confirm that the bike rack diagram and detail sheets have been uploaded to ePlan.

Response: An email conversation between MMC and Bruce Hyman, COP transportation manager, regarding a potential bike rack style has been uploaded to eplan.

12) Utility capacity letters

Response: Acknowledged. Capacity to serve letter will be shared with the City once received.

13) Plan edits
    a. -include distances to property lines on site plan
    b. -add height calculation from average grade on elevations (Still under review)
    c. -Tree well irrigation should be shown on plans.
    d. -Doublecheck location of main entrance as shown on site plan. I think the notation may be slightly misleading?

    Response: Comment acknowledged.

14) RTI
    a. Encroachments (building encroachment, 'mechanical areaway', potentially electrical/other utility infrastructure) are shown in the Gilman ROW. These will require license agreements

    Response: A mechanical areaway in the public ROW is no longer proposed.

    b. The Gilman Street sidewalk is proposed to extend onto private property. A public pedestrian easement is generally required in this type of instance.

    Response: Comment acknowledged.

15) Other Permits/Reviews Required
    a. Site Location of Development (under review)
    b. FAA

    Response: Acknowledged. Please refer to previous response regarding FAA requirements.

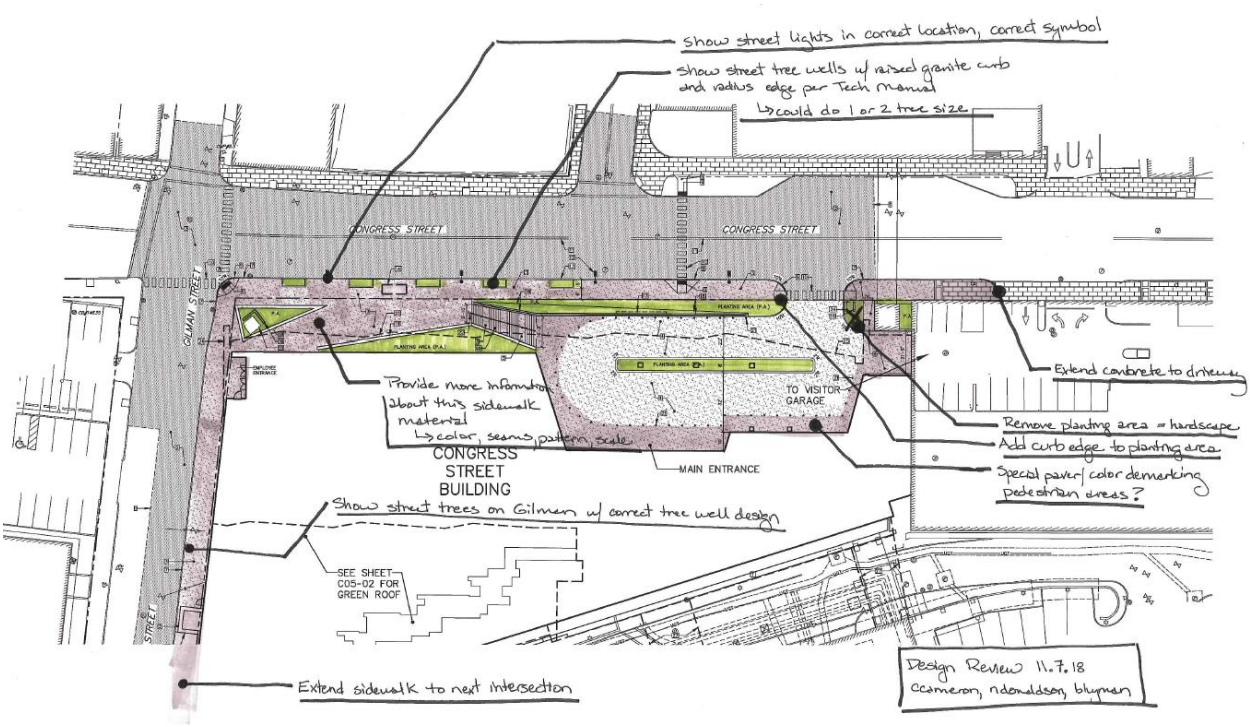
16) Waivers
    a. Sidewalk material waiver is recommended by staff.
    b. Gilman sidewalk waiver is not recommended by staff. Please show sidewalk on revised plans.
    c. Driveway width waiver still under review.

    Response: Acknowledged.

17) Outstanding Items from Earlier Reviews
    a. Pedestrian Network Plan (requirement of IDP, included as condition of approval on East Tower) - That the applicant shall develop a long term public Pedestrian Network Plan (both on and off the ROW) showing the integration of the upper level MMC campus with the Congress Street corridor, including measures to address CPTED principles, for implementation when the retail space beneath the Visitors Garage is available for lease or sale; such plan to be submitted for review and approval by the Planning Authority prior to the issuance of a building permit for the Congress Street Hospital Entrance"). (Under review by city)

Response: Pedestrian network plan has been submitted to the City. MMC has received preliminary comments and will follow up with the City to continue the conversation.

Comment from City design reviewers, Caitlin Cameron, Helen Donaldson, Bruce Hyman dated November 7, 2018.



Response:

7. Street lights
    - Submitted plans for spacing of streetlights correspond to submitted photometric calculations. Spacing and light levels meet city technical standards.
    - Unsure comment on symbol. Symbol is per our standard documentation and illustrates intent of scope.
8. Street Trees
    1. Raised granite curbs are indicated in submitted materials
    2. MMC and design team feel strongly against radius curb for multiple reasons including:
        1. Design team could not find specific language requiring radius curbs within the technical manual or standards. Please direct to specific language so we may review and properly respond.
        2. Uniform aesthetics are critical for a location that has continually been indicated as a gateway building and site. Owner and design team believe that design as submitted aesthetically connects the amenity of the urban plaza being provided by MMC to the public seamlessly with the required design of the city ROW.
        3. MMC has traditionally taken responsibility for snow and maintenance of this location due to hospital functions.
    3. Design will provide single trees at rhythm that connects ROW with design and layout of plaza including raised planter beds and plaza patterning.
9. Planting Area near Accessible Route/Pedestrian Bridge Pier
    1. Design team believes that maintaining this as planted material is important to first allow for additional natural materials connecting planting areas while providing a buffer between pedestrians and the vehicular entrance to the new entry plaza.
10. Requested Paver Color Variation

1. MMC and the design team believe strongly that maintaining a more holistic approach to paving, regardless or pedestrian or vehicular is critical to a uniform design linking the lower plaza to the upper plaza.
2. Separating modes of transportation with literal demarcation will emphasize vehicular importance as opposed to a more uniform plaza welcome to all modes of arrival to this new entry.
3. Bollards and tactile detection is utilized to further help delineate key separation and provide enhanced pedestrian safety.
4. Initial comments from City Planning Board supported currently documented design intent when asked during workshop.

Q

WRITTEN SUBMISSION 16 – SNOW STORAGE
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THE APPLICANT WILL CONTRACT WITH A PROPERTY MANAGEMENT COMPANY TO REMOVE SNOW FROM THE SITE. A SNOW MELT SYSTEM IS CONTEMPLATED AT THE PASSENGER ARRIVAL / DEPARTURE PLAZA, HOWEVER, MAY NOT BE INSTALLED PENDING REVIEW OF CONSTRUCTION COSTS.

15466

QQ

SEBAGO TECHNICS

CIVIL ENGINEERING · SURVEYING · LANDSCAPE ARCHITECTURE

CITY OF PORTLAND DELEGATED REVIEW

Maine Department of Environmental Protection
38 M.R.S.A. §§ 481 to 490

SITE LOCATION OF DEVELOPMENT

MAINE MEDICAL CENTER
CONGRESS STREET BUILDING
22 Bramhall Street
Portland, Maine

Prepared for:

Maine Medical Center
22 Bramhall Street
Portland, Maine

Prepared by:

Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, Maine 04106

October 2018

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Department of Environmental Protection
Bureau of Land & Water Quality
17 State House Station
Augusta, Maine 04333
Telephone: 207-287-3901

FOR DEP USE **FORM A PAGE 1**
ATS # _____
L-_____
Total Fees: _____
Date: Received _____

****

SITE LOCATION OF DEVELOPMENT PERMIT APPLICATION 38 M.R.SA. §§481-490

PLEASE TYPE OR PRINT IN *INK ONLY*

This application is for: (CHECK THE ONE THAT APPLIES)	☐ 20 acre development ☐ Planning Permit ☐ Metallic Mining	☐ Marine Oil Terminal Structure ☐ Subdivision	☒ Major Amendment ☐ Minor Amendment
1. Name of Applicant:	Maine Medical Center	**6. Name of Agent (if applicable):**	William T. Conway Sebago Technics, Inc.
2. Applicant's Mailing Address:	22 Bramhall Street Portland, ME 04102	**7. Agent's Mailing Address:**	75 John Roberts Road, Suite 4A S. Portland, ME 04106
3. Applicant's Daytime Phone #:	(207) 662-3689	**8. Agent's Daytime Phone # :**	(207) 200-2055
4. Applicant's Fax # (if available):		**9. Agent's Fax # (if available):**	(207) 856-2206
5. Applicant's *e-mail address* (REQUIRED -license will be sent via: e-mail):	agreen@mmc.org	**10. Agent's *e-mail address* (REQUIRED - license will be sent via e-mail):**	wconway@sebagotechnics.com

PROJECT INFORMATION

11. Name of Development:	MMC New Congress Street Building See Deed Package, Sec. 2						
12. Map and Lot #'s:	**Map #:**	**Lot #:**	**13. Deed Reference #'s:**		**Book #:**	**Page #:**	
14. Location of Project City/Town:	Portland	**15. County:**	Cumberland	**16. UTM Northing**		**17. UTM Easting**	
18. Brief Description of Project including total parcel size:	Removal of the employee parking structure and redevelopment of the site at the corner of Congress Street and Gilman Street.						

19. Type of Direct Watershed: (Check all that apply)

☐ Lake not most at risk ☐ River, stream or brook ☐ Coastal wetland
☐ Lake most at risk ☐ Urban impaired stream ☐ Wellhead or public water
☐ Lake most at risk, severely blooming ☐ Freshwater wetland

20. Name of Waterbody Project Site drains to:			
21. Amount of Developed Area:	Total acres: 9.48	Existing Developed area: 9.15 acres	New Developed area: 0.33 acres
22. Amount of Impervious Area:	Total acres: 9.48	Existing Impervious areas 9.15 acres	New Impervious area: 0.33 acres

23. Development started prior to obtaining a license?:	☐ Yes ☒ No		
24. .Development or any portion of the site subject to enforcement action?	☐ Yes ☒ No	**If yes**, name of enforcement staff involved?	
25. Common scheme of development?:	☐ Yes ☒ No	**26. Title, Right or Interest:**	☒ own ☐ lease ☐ purchase option ☐ written agreement
27. Natural Resources Protection Act permit required?:	☐ Yes ☒ No	**If yes:** ☐ PBR	☐ Tier 1 ☐ Full Permit ☐ Tier 2
28. Existing DEP Permit number (if applicable):	n/a		
29. Names of DEP staff person(s) present at the pre-application meeting:	City of Portland Delegated Review, Barbara Barhydt		
30. Does agent have an interest in project? If yes, what is the interest?	☐ Yes ☒ No		

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

CERTIFICATIONS / SIGNATURES

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the electronic address located on the front page of this application (see #5 for the applicant and #10 for the agent)"..

Signed: _____ **Title** Director of Planning **Date:** 10/31/18

Notice of Intent to Comply with Maine Construction General Permit	**With this Site Law application form and my signature, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit (MCGP). I have read and will comply with all of the MCGP standards.** **If this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign.** **Signed** _____ **Date:** 10/31/18

NOTE: You must file a MCGP Notice of Termination (Form K) within 20 days of completing permanent stabilization of the project site.

CERTIFICATION

The person responsible for preparing this application and/or attaching pertinent site and design information hereto, by signing below, certifies that the application for development approval is complete and accurate to the best of his/her knowledge.

Signature: _____

Name (print): William T. Conway

Date: _____

Re/Cert/Lic No.: _____

Engineer _____

Geologist _____

Soil Scientist _____

Land Surveyor _____

Site Evaluator _____

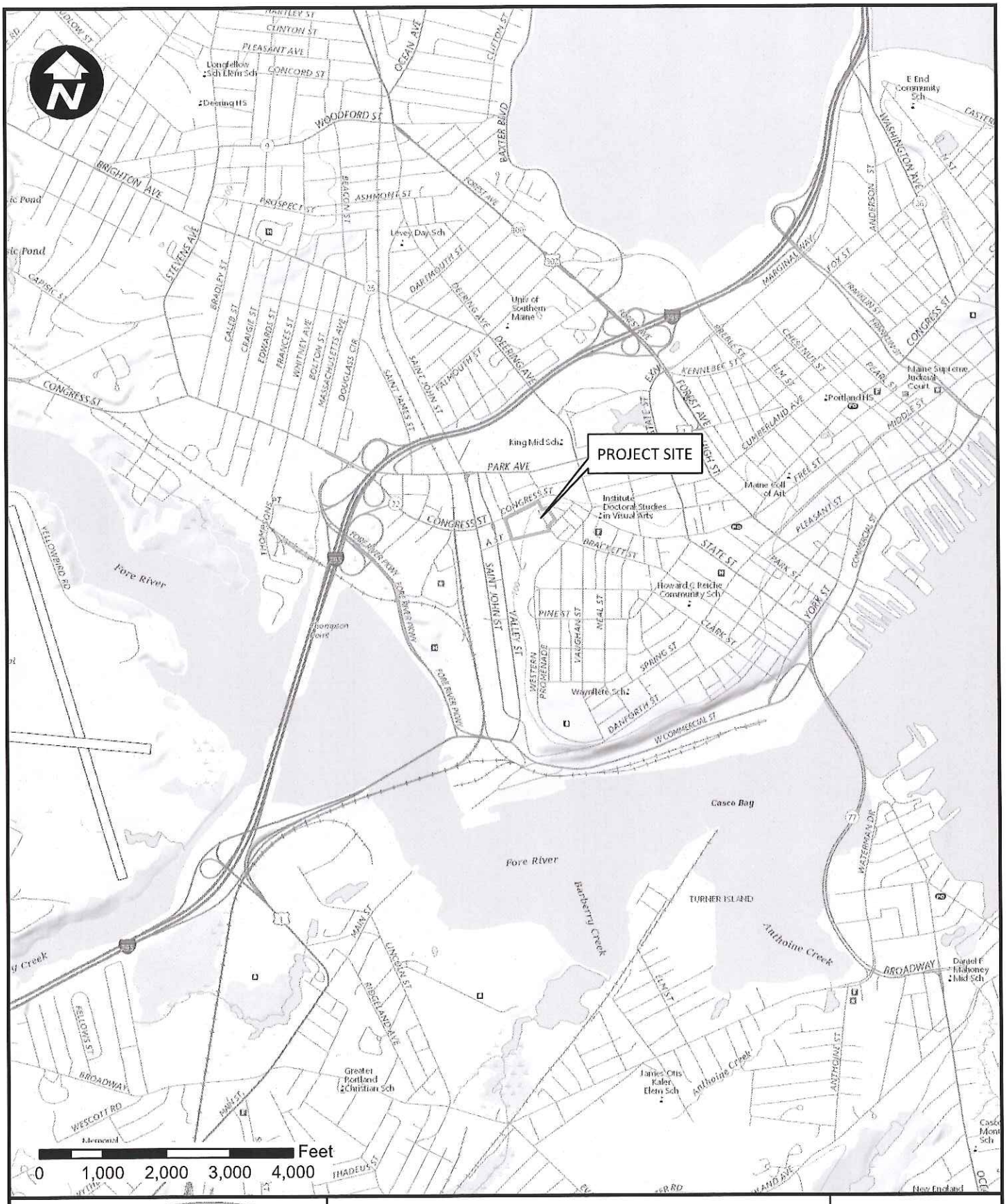
Active Member of the Maine Bar _____

Professional Landscape Architect _____

Other _____

Section 1

Development Description



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	SITE LOCATION MAP MMC CONGRESS STREET PATIENT CARE BUILDING	SCALE:	1 " = 2,000 '
		DATE:	10/24/2018
LOCATION:	22 Bramhall Street Portland, ME 04102	INFORMATION:	USGS Quadrangle: Portland West

15466_LocationMap.mxd

PROJECT NUMBER: 15466

Section 2

Title, Right or Interest

Section 2: Right, Title, Interest

The record owner of the parcel(s) is Maine Medical Center. Reference is made to the deed package enclosed in this section indicating ownership by the original deed of Bailey to Maine General Hospital in 1870 and subsequent land transfers.

Know all Men by these Presents, That

I William H. Bailey of Portland in the State of Maine

in consideration of the sum of Two Hundred and fifty Dollars paid by

The Maine General Hospital, a Corporation established by law at Portland

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital heirs and assigns forever.

Bailey to Maine General Hospital

U. S. I. R.
50 Cents
W. H. B.
June 6.
1870.

a certain lot of land situated on the Northwestern slope of Brownhills Hill in Portland, the same being lot numbered nine, on a plan made by Howe and Osgood September 1863 recorded in the Cumberland Registry of Deeds in Plan Book number two page 16. The said plan is of a tract of land extending from the rear of the State Arsenal lot to Congress street. The lot hereby conveyed is about forty feet in breadth and about sixty feet in length on the Southwest side of an unopened street laid down on said plan; the same conveyed to me by Moody F. Walker Oct. 14. 1863. Subject to the location of Ash street over any part of said lot, subject also to a mortgage for $37.50 given to Moody F. Walker which mortgage with all unpaid interest thereon, the present grantee is to assume and discharge.

To Have and to Hold the aforegranted and bargained Premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital heirs and assigns, to their use and behoof forever. And I do covenant with the said Grantee heirs and assigns, that I am lawfully seized in fee of the Premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I will and my heirs, shall and will warrant and defend the same to the said Grantee heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Grantor and Elvira W. my wife ~~of the said~~ in testimony of her relinquishment of her right of dower in the above described premises, have hereunto set our hands and seals this sixth day of June in the year of our Lord one thousand eight hundred and seventy.

Signed, Sealed and Delivered in presence of

P. Barnes to W. H. B. — William H. Bailey Seal

Joseph S. Bailey to E. W. B. — Elvira W. Bailey Seal

State of Maine Cumberland, ss. June 6th 1870. Personally appeared the above-named William H. Bailey and acknowledged the above instrument to be his free act and deed. Before me,

P. Barnes Justice of the Peace.

Received June 6. 1870, at 12 o'clock 54 m. P. M., and recorded according to the original.

Attest, Eben Leach Register.

Know all Men by these Presents, That

I, Hugh Carney of Portland in the State of Maine

in consideration of the sum of Five Hundred Dollars paid by The Maine General Hospital, a Corporation established by law at Portland aforesaid, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital ~~heirs and assigns forever~~,

U. S. I. R.
50 Cents
H. C.
June 6. 70

a certain parcel of land situated on the North-western slope of Bramhall's hill in Portland, bounded on the East by the State Arsenal lot and on the North by land of the City; the same conveyed to me by Moody T. Walker Oct. 14. 1863, in two lots about forty feet in width by about sixty feet in length, which are numbered two and four on a plan of the same and adjoining lands made by Howe and Osgood Sept. 1863, which is recorded under date of January 20, 1864 in Plan Book number two page 36 of the Cumberland Registry of Deeds. Subject to the location of Ash street over any part of said lots.

Carney to Maine General Hospital

To Have and to Hold the aforegranted and bargained Premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital ~~heirs and assigns~~, to their use and behoof forever. And I do covenant with the said Grantee ~~heirs and assigns~~, that I am lawfully seized in fee of the Premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I will and my heirs, shall and will warrant and defend the same to the said Grantee ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Grantor and Bridget D. my ~~wife of the said~~ in testimony of her relinquishment of her right of dower in the above described premises, have hereunto set our hands and seal this sixth day of June in the year of our Lord one thousand eight hundred and seventy.

Signed, Sealed and Delivered in presence of

P. Barnes to H. C. — Hugh his X mark Carney Seal.

Witnessed by Edward N. Bates — Bridget Carney Seal.

State of Maine
Cumberland, ss. June 6th 1870. Personally appeared the above-named Hugh Carney and acknowledged the above instrument to be his free act and deed. Before me,

P. Barnes Justice of the Peace.

Received June 6 1870, at 12 o'clock 54 m., P. M., and recorded according to the original.

Attest, Eben Leach Register.

State of Maine Cumberland ss Portland May 19th 1870.
Then personally appeared the abovenamed Sarah M. Bridges and acknowledged the foregoing instrument to be her free act and deed.
Before me, George R. Davis Justice of the Peace

Received May 19 1870 at 5 h. 20 m. P.M. and recorded according to the original
Attest. Ebenezer Leach Register

Agreement of Joseph S Bailey with Maine Hospital

Agreement made the 27th day of April 1870 by Joseph S Bailey of Portland for the conveyance of certain land to the Maine General Hospital.
For a valuable consideration the said Bailey agrees to convey by deed of warranty to the Maine General Hospital, upon the conditions hereinafter named, a certain parcel of land situated on the slope of Deamhalls Hill in Portland, being the western part of a parcel of about two acres extending from the General ground to Congress street, formerly owned by M. F. Walker and others, described, as divided into lots on a plan made by Howe and Osgood in 1863 through which two acre parcel a street called Oak street has recently been laid out, and being all of said two acre parcel, except the ten lots nearest the General, and except the part of the street adjoining the ten lots. The conveyance hereby agreed to be made is to include the fee of the land covered by the new street west of the ten lots, but subject to the location of the street.
This agreement is to be in force for the term of forty days from and after this date.
The conditions upon which the conveyance is to be made, are, that the Hospital shall within the said forty days pay to the said Bailey, or to his written order, the sum of two thousand dollars, upon which payment the deed is to be made and delivered, and shall therefore make and deliver to the said Bailey or to his written appointment two several negotiable promissory notes, one for two thousand dollars payable in two years from the date of the deed, and one for one thousand dollars payable in three years from the same date, both with interest half yearly at the rate of seven and one half per annum, with liberty to pay more than one thousand dollars on said notes at any time before maturity, together with a mortgage of the premises to secure the same, and shall assume and pay according to its tenor a mortgage now subsisting

on a part of said premises, for one thousand dollars, given by said Bailey in 1866 in six years, subject to which mortgage this agreement is made, interest accrued on said mortgage to the date of this conveyance to be paid by said Bailey.

In witness whereof, the said Bailey has hereunto set his hand and seal the day and year first above written.

U. S. Inter. Revenue 5 cts. J. S. B. Apl. 27. 1870.	Witness, P. Barnes	Joseph S. Bailey Seal

State of Maine Cumberland St. On this 21st day of May 1870 personally appeared Joseph S. Bailey and acknowledged the foregoing instrument by him subscribed to be his free act and deed.

Before me P. Barnes Justice of the Peace.

Received May 21, 1870 at 4h 10m P.M. and recorded according to the original.

Attest: Eben Leach Register.

U. S. I. R. $2.00 H. S. L. May 21 1870.	Know all men by these presents that I, Horatio S. Libby of Portland in the County of Cumberland and State of Maine in consideration of Two Thousand Dollars paid by John Lindsey of Scandish in the County of Cumberland and State of Maine,	Libby to Lindsey

the receipt whereof is hereby acknowledged, do hereby give grant, bargain, sell and convey unto the said John Lindsey, a certain lot of land and the buildings thereon situated on the Southwesterly side of Chestnut Street in said Portland and bounded beginning at the Northerly corner of land of Benjamin Tukey formerly Leonard Crosse's land and running thence Northwesterly on said street thirty five feet; thence Southwesterly at right angles with said street sixtynine feet to a stake or stones; thence Southeasterly on a line parallel with said street thirtyfive feet to a stake or stones; thence at right angles with the last line by Mr. A. Hay's land and said Tukey's land sixtynine feet to the bound begun at containing about two thousand and four hundred feet, being a part of the land conveyed to me by Miriam Libby sale by deed dated January 18th 1854 and recorded in Cumberland Registry of Deeds Book 257 Page 27. Subject to a mortgage to the City of Portland on which is now due about two thousand dollars.

To have and to hold the above granted premises

Portland May 7th 1874.
This mortgage having been paid and fully satisfied, is hereby cancelled and discharged.
Witness
John Lindsey

their hands and seals this twentieth day of October A. D. 1870.

Richard D. Rice {President of Maine Central Railroad Company

Countersigned by Joshua Nye, Treas. of Maine Central R. R. Co.

William L. Putnam Seal
Artemas Libbey Seal.
James T. Patten. Seal.

Cumberland ss. Oct. 20, 1870. Then personally appeared Richard D. Rice, President of the Maine Central Railroad Company and acknowledged the foregoing instrument to be the free act and deed of said Corporation, before me,

Josiah H. Drummond Justice of the Peace.

Received Nov. 2, 1870 at 2h. 30m. P. M. and recorded according to the original.

Attest: Chas Leach Register

City of Portland to Me. Gen. Hospital

Whereas the City Council of the City of Portland, upon the petition of the Maine General Hospital, praying that the City would grant to the Corporation certain lands for the purpose of enlarging the building site of the Hospital, and rendering the same more commodious and useful for the objects thereof, by concurrent order of the two Branches, passed by the same respectively, on the 13d and 14th days of May 1870, and approved by the Mayor on the 31st day of the same month, ordered, that the prayer of the petition be granted, and that a deed in furtherance thereof be executed and delivered for the conveyance prayed for.

Now, know all men by these presents that the City of Portland, in pursuance of the foregoing order, and in consideration of Ten Dollars paid by the Grantee hereinafter named, the receipt whereof is hereby acknowledged, doth hereby give, grant, bargain, sell and convey to the Maine General Hospital, a Corporation established by law at Portland aforesaid, a certain parcel of land, belonging to the City, situated on the slope of Bramhall's Hill, bounded on

the Northeast by a line, as now fenced, in continuation of the Northeast side line of the Maine State Arsenal lot, and on the Southwest by lands of Joseph S. Bailey and others, and extending Northward, between those limits, from the Arsenal lot to Congress street.

Also another parcel of land belonging to the City, situated on the Southwest side of the Arsenal lot and of the lands of Bailey and others, having a front on a line in continuation of the Northwest side line of Arsenal street as far as to the Northeast side line of a contemplated street, and extending Northwardly from Arsenal street between the contemplated street on the South and the Arsenal lot and Bailey land on the North to Congress street.

The said contemplated street is laid down and designated by the name of Gilman street on a Plan made by J. P. Chappell, Engineer, May 11. 1874, to which Plan, verified as required by the Order of the City Council, by the signature of the City Treasurer, reference is made for more exact ascertainment of the position and course of said street.

This conveyance is made upon the condition that the lands hereby granted and conveyed shall be held for the purposes of the Hospital, as a part of its building site and grounds; and that whenever the same shall cease to be so used, they shall revert to the City.

Also upon the further condition, that if the Hospital shall acquire a title to the lands of Bailey and others above mentioned, and the contemplated street shall at any time thereafter be laid out and opened across the same as described on said Plan, no damages or compensation shall be claimed by the Hospital therefor.

To have and to hold the premises, with the privileges and appurtenances thereof, to the said Maine General Hospital, to its use and behoof forever, subject to the conditions aforesaid.

In witness whereof, these presents are subscribed and sealed, in behalf of the City, by Henry H. Hersey, City Treasurer, duly authorized by the Order aforesaid, this fourth day of June in the year of our Lord

one thousand eight hundred and seventy.

Signed, sealed, and delivered in presence of Benj. Kingsbury Jr. } Henry W. Hersey City Treasurer.



State of Maine.

Cumberland ss. On this sixth day of August 1870, personally appeared Henry W. Hersey and acknowledged the foregoing instrument by him subscribed to be the deed of the City of Portland.

Before me,

Benj. Kingsbury Jr. Justice of the Peace.

Received Nov. 14. 1870 at 1 h. P.M. and recorded according to the original.

Attest. Eben Sacich Register

P. & O. R. R. Co to Davis et al

U. S. I. R. $800.00 P. & O. R. R. Co By S. J. A. Bu Nov. 1. 1870

Discharge Book 702 Page 65

Know all men by these presents, that the Portland and Ogdensburg Railroad Company, a Corporation established by the Legislature of the State of Maine, and authorized and empowered by the Legislature of New Hampshire to construct and extend its Railroad across said State of New Hampshire, subject to the laws thereof relating to Railroads, and having its principal office for the transaction of business at Portland in the County of Cumberland and State of Maine, for the purpose of effecting the several trusts and securities hereinafter set forth, created and declared, designed to enable and provide for the more speedy construction and equipment of the Railroad of said Company, and in consideration of One Dollar paid by the Grantees and Trustees hereinafter named, doth hereby give, grant, bargain, sell and convey to Woodbury Davis, Samuel E. Spring, and Weston F. Milliken, all of Portland aforesaid, Gentlemen, their survivors and successors as hereinafter designated, all that part of the Railroad of said Company extending and to be extended from the terminus in Portland, in the State of Maine to Bartlett in the State of New Hampshire, located and to be located within said limits, called the Portland and Ogdensburg Railroad, including all the rights of way and lands taken and

Know all Men by these Presents, That

I Phinehas Barnes of Portland, in the County of Cumberland, State of Maine

in consideration of Four Thousand and Seventy one 37/100 Dollars paid by

The Maine General Hospital, a Corporation established by the Laws of said State

the receipt whereof I do hereby acknowledge, do hereby remise, release, bargain, sell and convey, and forever quit claim unto the said Maine General Hospital, its successors

Barnes to Maine G Hospital

heirs and assigns forever, all my right, title and interest in and to Twenty several lots of land

U. S. I. R.
$4.50
P. B.
July 18/71.

situated on the Northwestern slope of Bramhall's Hill in said Portland described and numbered on a plan of a tract of about two acres, extending from the Maine State Arsenal Grounds, to Congress Street which plan was made in September 1863, by Howe and Osgood, and is recorded in the Cumberland Registry of Deeds, in Plan Book, numbered two, page thirty six - the lots hereby conveyed being numbered one, three, five, seven, eight, ten, eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, twenty, twenty one, twenty two, twenty three, and twenty four. 1. 3. 5. 7. 8. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23 & 24. together with all my right title, and interest in and to the land adjoining any of said lots, embraced within the location of Ash street, as laid out by the City the last year: The design of this Deed being to discharge trusts mentioned in Deeds to said Barnes from Moody F. Walker & wife dated 6 June 1870 recorded in said Registry, Book 377 page 302 & from Joseph S. Bailey dated 6 June 1870, recorded in said Registry Book 377 page 301, the Mortgage obligations of said Barnes mentioned in said Deeds having been discharged, by said Hospital

To Have and to Hold the same, together with all the privileges and appurtenances thereunto belonging, to them the said Corporation, its successors

heirs and assigns forever. And I do covenant with the said Corporation, its successors

heirs and assigns, that I will warrant and forever defend the premises to them the said Corporation its successors

heirs and assigns forever, against the lawful claims and demands of all persons, claiming by, through, or under me.

In Witness Whereof, I the said Phinehas Barnes, and Ann B. Butler wife of the said Barnes, in testimony of her relinquishment of her right of Dower in the above described Premises

have hereunto set . . . hand and seal this Eighth day of July in the year of our Lord one thousand eight hundred and seventy one.

Signed, Sealed and Delivered in presence of
Wilfred Barnes to P. B.
Wilfred Barnes to A. B. B.

P. Barnes Seal
Ann B. Barnes Seal

State of Maine
Cumberland, ss. 8th July 1871. Personally appeared the above-named Phineas Barnes and acknowledged the above instrument to be his free act and deed. Before me,

James T. McCobb Justice of the Peace.

Received July 11 1871, at 11 o'clock 21 m., A. M., and recorded according to the original.

Attest, Eben Leach Register.

with interest, and all cost and expenses, including all sums paid by said Grantee or assigns for insurance of the premises and for taxes paying the surplus, if any, to the said Grantors, or their assigns: and such sale shall forever bar the said Grantors and all persons claiming under them from all right and interest in the premises at law or in equity. It being mutually agreed that the said Grantee or assigns may purchase at said sale, and that no other purchaser shall be answerable for the application of the purchase money.

In witness whereof, we the said Grantors, Emily F. Bailey and Benjamin H. Bailey have hereunto set our hands and seals this thirteenth day of January in the year of our Lord eighteen hundred and seventy one.

Signed, sealed and delivered in presence of
Benj. Kingsbury Jr.

Emily F. Bailey. Seal
Benj H. Bailey. Seal

State of Maine.
Cumberland ss. Portland January 13. 1871. Then personally appeared the abovenamed Benjamin H. Bailey and Emily F. Bailey and acknowledged the foregoing instrument to be their deed.

Before me,
Benj. Kingsbury Jr. Justice of the Peace.

Received Jan. 14. 1871 at 12 h. 29 m. P. M. and recorded according to the original.
Attest: Eben Leach Register

State of Maine
to
Maine General Hospital

State of Maine.
Resolve in favor of the Maine General Hospital.
Resolved, That all the right, title and interest of this State in and to the lot of land, not including the buildings thereon, situated on Bramhall Hill in the City of Portland and County of Cumberland, being the present site of the State Arsenal is hereby granted to the Maine General Hospital, a corporation established by acts of the Legislature, passed February twenty-fourth, one thousand eight hundred and sixty eight, to have and to hold to

said corporation for the purpose of erecting and maintaining thereon its hospital buildings; and when such land ceases to be so used, it shall revert to the State. But this grant shall not take effect until it is shown to the satisfaction of the Governor that said Corporation has raised by responsible private subscriptions or donations the sum of Twenty Thousand Dollars; nor until the Governor has certified on a copy of this resolve certified by the Secretary of State, that the aforenamed condition precedent has been complied with; but when that is done, the grant shall take effect; and the recording of such certified copy, with the Governor's certificate thereon, in the Registry of Deeds in the County of Cumberland, shall be sufficient record evidence thereof.

Resolved That when said Corporation has raised, received into its treasury and actually expended towards the construction of its hospital buildings on said lot, the sum of Thirty thousand dollars, and this fact is shown to the satisfaction of the Governor, he may draw his warrants on the Treasurer of State for the sum of Ten thousand dollars in favor of said Corporation and payable to its Treasurer; and when said Corporation has so raised, received into its Treasury and expended in the construction of its hospital buildings the sum of Ten thousand dollars more, or Fifty thousand dollars in all, including the Ten thousand from the State, and this fact is shown to the satisfaction of the Governor, he shall draw his warrants on the Treasurer of State for the sum of Ten thousand dollars more in favor of said Corporation and payable to its Treasurer; and the sum of Twenty thousand dollars is hereby appropriated to carry into effect the purposes of this Resolve, to be paid from any money in the Treasury not otherwise appropriated.

In the House of Representatives March 18 1870.

Read and passed finally.

Reuben Foster Speaker

In Senate March 18" 1870

Read and passed finally.

Wm. W. Bolster, President

March 19th 1870. Approved. Joshua L. Chamberlain, Governor

State of Maine
Office of Secretary of State,
Augusta, Dec. 15. 1870

I hereby certify that the foregoing is a true copy of the original as deposited in this Office.

Franklin M. Drew.
Secretary of State

I, Joshua L. Chamberlain Governor of Maine in compliance with the terms of the Resolve of which the foregoing is a copy certified by the Secretary of State, hereby certify that it has been shown to my satisfaction that the Maine General Hospital the Corporation within named has raised by responsible private subscriptions and donations the sum of twenty thousand dollars.

In witness whereof I have hereunto set my hand this sixteenth day of December A. D. 1870.

In presence of
F. C. Chamberlain
Charlotte M. Packard
} Joshua L. Chamberlain
Governor of Maine

Received Jan. 16. 1871 at 2 h. 44 m. P. M. and recorded according to the original.

Attest: Eben Leach Register

U. S. I. R. Fifty lets. N. H. K. Jan. 13. 1871

Know all men by these presents, that I, Wm. H. Kneeland of Stoneham, Mass. in consideration of Four Hundred Fifty Dollars to me paid by Seth Kneeland of Harrison, County of Cumberland, State of Maine, the receipt whereof is hereby acknowledged, do hereby sell, remise, release, and forever quitclaim unto the said Seth Kneeland, all my right, title and interest in and to a certain farm or parcel of real estate described as follows, to wit, the same deeded to me by the said Seth Kneeland by his deed; said deed dated Jany. forth 4. 1869, said deed recorded Book 364 Page 288. being the same farm Seth Kneeland now lives on in Harrison all taxes excepted.

Kneeland to Kneeland

To have and to hold the above released premises, with all the privileges and appurtenances to the same belonging, to the said Seth, his heirs and assigns, to their use and behoof forever. And I the said

Know all Men by these Presents, That

I, Bartholomew Wren of Portland in the county of Cumberland State of Maine

in consideration of five hundred dollars paid by

The Maine General Hospital a corporation doing its business in said Portland

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital its successors its and their heirs and assigns forever, a certain lot of land on the easterly side of (what is or lately was) Ash Street in said Portland being sixty five feet in length & running back from the line of said Ash Street & forty feet in width being the same lot indicated as number six (No 6) on a certain plan of land surveyed for Moody F. Walker September 23. 1863 by Howe & Osgood Civil Engineers which plan is placed on file in the office of the Registry of Deeds for Cumberland county for the purpose of reference in the matter of conveyances that have been or may be made by said Moody F. Walker of the lots of land specified in said plan. The same property conveyed to me by said Moody F. Walker by deed dated the 16th October 1863 recorded in said Registry Book 323 page 199.

Wren
To
Maine Gen Hospital

U.S.I.R.
$0.50
B.W.
Sept. 15
1871

To Have and to Hold the aforegranted and bargained Premises, with all the privileges and appurtenances thereof, to the said Corporation its successors its & their heirs and assigns, to their use and behoof forever. And I do covenant with the said Corporation its successors its & their heirs and assigns, that I am lawfully seized in fee of the Premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Corporation to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee its successors its & their heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Bartholomew Wren and Margaret wife of the said Bartholomew Wren in testimony of her relinquishment of her right of dower in the above described premises, have hereunto set our hands and seals this twenty eighth day of August in the year of our Lord one thousand eight hundred and Seventy one

Signed, Sealed and Delivered
in presence of

James T. McCobb — Bartholomew Wren — Seal
Witness — Margreth her mark Wren — Seal
Michael White

Cumberland, ss. 15 September 1871 Personally appeared the above-named Bartholomew Wren and acknowledged the above instrument to be his free act and deed. Before me,

James T. McCobb Justice of the Peace.

Received Sept. 18 1871 at 4 o'clock 17m. P.M. and recorded according to the original.

Attest, Register.

Know all Men by these Presents, That

The City of Portland, a corporation in the County of Cumberland, State of Maine,

in consideration of One Dollar & other considerations paid by The Maine General Hospital, a corporation in said State & County & City,

the receipt whereof We do hereby acknowledge, do hereby remise, release, bargain, sell, and convey, and forever QUIT-CLAIM unto the said Maine General Hospital, its successors

~~heirs~~ and assigns forever, all our right, title, and interest in and to a lot of land, on the slope of "Bramhalls Hill", in said city, being the land which lies between the land owned by said Hospital & Gilman Street & Arsenal Street extended westerly & southerly bounded: Beginning at the southwest corner of a lot of land conveyed to said Hospital by said city in 1870, thence southwesterly on the northerly line of Arsenal Street produced 130 feet, more or less, to Gilman Street, thence northerly by east line of Gilman Street 653 feet, more or less, to Bailey's land, thence southeasterly by Bailey's land 71 feet, more or less, to land of said Hospital, thence by said Hospital land 544 feet, more or less to point of beginning: Provided, That The Powder House now on said lot be allowed to remain, without expense to the city until such time as the city shall provide some other house for powder, or remove this one from the lot.

Portland
To
M. General
Hospital

To Have and to Hold the same, together with all the privileges and appurtenances thereunto belonging, to the said Grantees, their successors & assigns, their heirs & assigns forever. ~~And do covenant with the said heirs and assigns, that will warrant and defend the premises to the said heirs and assigns forever, against the lawful claims and demands of all persons, claiming by, through, or under.~~

In Witness Whereof, We the said Grantors, by Henry W. Hersey City Treasurer, authorized thereto by vote of the City Council of said City, approved the 2 March instant have hereunto set our hand and seal this sixth day of March in the year of our Lord one thousand eight hundred and seventy-five.

Signed, Sealed, and Delivered in presence of

3 printed words erased & 4 interlined before execution.

S. B. Beckett

City of Portland
by H. W. Hersey, Treas.

State of Maine

Cumberland, ss. March 1874. Personally appeared the above-named Henry W. Hersey and acknowledged the above instrument to be his free act and deed, & the free act & deed of said city.

Before me S. B. Beckett, Justice of the Peace.

Received March 19 1875, at 9 o'clock 45 m. A. M., and recorded according to the original.

Attest, Henry C. Houston Register.

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Know all Men by these Presents, That

Book 1250
Page 470

I, Margaret E. L. Sherman, of Norwalk, in the County of Fairfield and State of Connecticut,

in consideration of one dollar and other valuable consideration, paid by Maine General Hospital, a corporation organized and existing under the laws of the State of Maine, and located at Portland, in the County of Cumberland and State of Maine the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital, its successors and assigns forever, a certain lot or parcel of land, with the buildings thereon, situated on the northwesterly side of Arsenal Street in said Portland, bounded and described as follows; Beginning at a point on said northwesterly side of Arsenal Street where the northeasterly side line of land of said Maine General Hospital, formerly known as the Arsenal Lot, adjoins the lot hereby conveyed; thence running northeasterly by said Arsenal Street forty (40) feet to a point; and from these two points extending northwesterly, adjoining said land of Maine General Hospital and keeping a width of forty (40) feet, one hundred (100) feet more or less to Ellsworth Street.

Meaning and intending hereby to convey the same premises conveyed to William H. Bigelow by John B. Brown by deed dated March 30, 1865, recorded in Cumberland Registry of Deeds, Book 317, page 321, my title to the same having been acquired as devisee under the will of said William H. Bigelow, extract from which is recorded in said Registry of Deeds, Book 627, page 231, in which will I am designated as Margaret Eva Lena Taylor, and by deed of Joshua L. Taylor to me dated January 11, 1897, recorded in said Registry of Deeds, Book 640, page 282.

Said premises are conveyed subject to a mortgage to Portland Savings Bank upon which there is due the principal sum of $1,650, which the grantee hereby assumes and agrees to pay as a part of the consideration hereof.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital, its successors heirs and assigns, to its and their use and behoof forever. And I do covenant with the said grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; except said mortgage; that I have good right to sell and convey the same to the said grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons. except as aforesaid.

In Witness Whereof, I, the said Margaret E. L. Sherman, and I, John C. Sherman, husband of the said Margaret E. L. Sherman joining in this deed as grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises,

have hereunto set our hand s and seal s this third day of December in the year of our Lord one thousand nine hundred and twenty-six.

Signed, Sealed and Delivered in presence of

John F. Dana to E.S.L.S. — Margaret E. L. Sherman Seal.

Geo. Davis, C. G. Hanson } as to J.C.S. — John C. Sherman Seal.

State of Maine, CUMBERLAND, ss. December 5, 1926. Personally appeared the above named Margaret E. L. Sherman and acknowledged the above instrument to be her free act and deed.

Before me, John F. Dana, *Justice of the Peace.*

Received December 4, 1926, at 9 o'clock - m. A. M., and recorded according to the original.

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Book 1282
Page 323

Know all Men by these Presents, That

I, Emma W. Hill of Portland in the county of Cumberland and State of Maine,

in consideration of one dollar and other valuable considerations, paid by Maine General Hospital, a corporation existing by law, with an established place of business in said Portland, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital, its successors and assigns forever, a certain lot or parcel of land, with the buildings thereon, situated in said Portland, and bounded and described as follows: Beginning at the intersection of the northerly side line of Arsenal street and the westerly side line of a passageway extending from Arsenal street to Ellsworth street; thence north 20° west sixty-one and five tenths (61.5) feet by the westerly side line of said passageway to a point; thence south 70° west about thirty-four and three tenths (34.3) feet to land formerly of Nathan Moses; thence southerly by said Moses land sixty-seven (67) feet to a point on the northerly side of Arsenal street; thence north 60° 58' east by the northerly side line of Arsenal street thirty-four (34) feet, more or less, to the point of beginning.

Together with the rights of the grantor in a twelve (12) foot passageway.

Meaning and intending to hereby convey the same premises conveyed to Everett L. Hill by Micah M. Gwynn, by deed dated February 2, 1920, recorded in Cumberland Registry of Deeds, Book 1042, page 256, and the same conveyed to this grantor by said Everett L. Hill by deed dated October 15, 1924, recorded in Cumberland Registry of Deeds, Book 1168, page 351.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital, its successors heirs and assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, the said Emma W. Hill and Everett L. Hill, husband of the said Emma W. Hill, joining in this deed as grantor, and relinquishing and conveying his rights by descent and all other rights in the above described premises have hereunto set our hand s and seals this sixteenth day of December in the year of our Lord one thousand nine hundred and twenty-seven.

Signed, Sealed and Delivered in presence of

John B. Kehoe to both

Emma W. Hill Seal.

Everett L. Hill Seal.

State of Maine, CUMBERLAND, ss. December 16, 1927. Personally appeared the above named Emma W. Hill and acknowledged the above instrument to be her free act and deed.

Before me, John B. Kehoe, *Justice of the Peace.*

Received December 16, 1927, at 11 o'clock 10 m. A. M., and recorded according to the original.

Know all Men by these Presents, That

Book 1295
Page 450

I, Harriet L. Stevens of Portland in the County of Cumberland and State of Maine,

in consideration of one ($1.00) dollar and other valuable considerations, paid by Maine General Hospital, a corporation organized and existing under the laws of said State of Maine, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital, its successors and assigns forever, a certain lot or parcel of land, with the buildings thereon, situated in said Portland, bounded and described as follows: Beginning on the westerly side of a twelve (12) foot passageway leading from Arsenal Street to Ellsworth Street at a point sixty-one and five-tenths (61.5) feet distant from the intersection of the northerly side line of Arsenal Street with the westerly side line of said passage-way; thence south seventy (70°) degrees west, thirty-four and three-tenths (34.3) feet, more or less, to land formerly of Nathan Moses; thence northerly by said Moses land thirty-three (33) feet, more or less, to the southerly side line of Ellsworth Street; thence easterly along the southerly side line of Ellsworth Street thirty-four (34) feet, more or less, to its intersection with the westerly side line of said passageway; thence southerly along the westerly side line of said passageway thirty-eight and five-tenths (38.5) feet, more or less, to the point of beginning.

The above described premises are in the northerly portion of the premises conveyed to Shailer G. Cushing by Seth G. Gordon by his warranty deed dated September 21, 1907, and recorded in Cumberland County Registry of Deeds, Book 814, page 37.

Being the same premises conveyed to me under the name of Hattie L. Stevens by Perley W. Stevens by warranty deed dated December 24, 1912, and recorded in said Registry of Deeds, Book 906, page 161.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital, its successors heirs and assigns, to their use and behoof forever. And I do covenant with the said Grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all encumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Harriet L. Stevens, and I, Perley W. Stevens, husband of the said Harriet L. Stevens, joining in this deed as Grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises

have hereunto set our hand s and seals this nineteenth day of February in the year of our Lord one thousand nine hundred and twenty-eight.

Signed, Sealed and Delivered in presence of

R. E. Snow to both

Harriet L. Stevens Seal.
Perley W. Stevens Seal.

State of Maine, Cumberland, ss. February 19, 1928. Personally appeared the above named Harriet L. Stevens and acknowledged the above instrument to be her free act and deed.

Before me, Reuben E. Snow, *Justice of the Peace.*

Received March 20, 1928, at 8 o'clock 30 m. P. M., and recorded according to the original.

Know all Men by these Presents, That

I, Eunice M. Chase (formerly Eunice Margaret Graham) of Portland, in the County of Cumberland and State of Maine,

in consideration of One dollar ($1.00) and other valuable considerations, paid by Maine General Hospital, a corporation organized and existing under the laws of said State of Maine, and located at said Portland,
the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital, its successors and assigns forever, a certain lot or parcel of land with the buildings thereon, situated on the westerly side of a thirty foot passage way leading Northerly from Ellsworth Street, in the City of Portland, State of Maine, and now known as Charles Street, and bounded and described as follows, namely;

Beginning in the westerly side line of said Charles Street at the northeasterly corner of land now or formerly of Charles A. Donnell, thence northerly, by said Charles Street, thirty feet, thence westerly, on a line parallel with the northerly line of said Donnell's land seventy-four and two-tenths (74 2/10) feet to the Arsenal Lot, so called, now owned by said Maine General Hospital; thence southerly by said Arsenal Lot, thirty feet to said Donnell's land; thence easterly by said Donnell's land seventy-four and two tenths (74 2/10) feet to the point of beginning.

Being the same premises conveyed to me under the name of Eunice Margaret Graham Chase by William Graham by warranty deed dated July 1, 1919, recorded in Cumberland Registry of Deeds, Book 1042, page 471.

Also a certain other lot or parcel of land with the buildings thereon situated in said Portland on the westerly side of Charles Street, and bounded and described as follows, to wit:

Beginning on the westerly side line of said Charles Street at a point distant seventy-three (73) feet northerly from the northeasterly corner of land now or formerly of Wiggins; thence northerly by said Charles Street forty-seven (47) feet to a stake; and from these two points extending back westerly, at right angles with said Charles Street and keeping said width of forty-seven (47) feet, about seventy-four and two-tenths (74.2) feet to the "Arsenal Lot" so called, now owned by said Maine General Hospital; and being the same premises conveyed to Mary Rich Graham, deceased, by Charles A. Donnell, by his deed dated July 1, 1893, recorded in the Cumberland Registry of Deeds, Book 604, page 124.

My title to said premises was acquired as an heir-at-law of said Mary Rich Graham, and by warranty deed from William Graham and Paul G. Graham to me under the name of Eunice Margaret Graham, dated August 2, 1912, recorded in said Registry of Deeds, Book 898, page 33.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital, its successors heirs and assigns, to its and their use and behoof forever. And I do covenant with the said grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Eunice M. Chase, and I, Harold B. Chase, husband of the said Eunice M. Chase joining in this deed as Grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises have hereunto set our hands and seals this twentieth day of April in the year of our Lord one thousand nine hundred and twenty-eight.

Signed, Sealed and Delivered
in presence of

John F. Dana to both

Eunice M. Chase Seal
Harold B. Chase Seal

State of Maine, Cumberland, ss. April 20, 1928. Personally appeared the above named Eunice M. Chase and acknowledged the above instrument to be her free act and deed.

Before me, John F. Dana, *Justice of the Peace.*

Received April 20, 1928, at 10 o'clock 50 m. A. M., and recorded according to the original.

Know all Men by these Presents, That

I, Elizabeth Naylor, of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable consideration, paid by Maine General Hospital, a corporation organized and existing under the laws of said State of Maine, and located at said Portland, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said

Maine General Hospital,its successors and assigns forever, a certain lot or parcel of land, with the buildings thereon,situated in said Portland, on the northerly side of Ellsworth Street and westerly side of Charles Street,bounded and described as follows: Beginning at the corner formed by the intersection of the westerly side of Charles Street and the northerly side of Ellsworth Street, and running westerly by said Ellsworth Street to land conveyed by William R. Naylor to Samuel W. Joy by deed dated November 5,1905, and recorded in Cumberland County Registry of Deeds,Book 776,page 200;thence northerly by said Joy land to land now or formerly of Levi J. Jones;thence easterly by said Jones land to said Charles Street;thence southerly by said Charles Street to the point of beginning.

Being the same premises conveyed to William R. Naylor by John B. Brown by deed dated February 20,1872, recorded in Cumberland County Registry of Deeds,Book 393, page 105, excepting therefrom the portion thereof conveyed by William R. Naylor to Samuel W. Joy by deed aforesaid. My title to said premises having been acquired as devisee under the will of William R. Naylor, extract from which is recorded in said Registry of Deeds,Book 788,page 307.

Also hereby conveying any right,title and interest I may have in said Ellsworth Street.

Taxes for the year 1928 are to be prorated between the grantor and grantee.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital,its successors heirs and assigns, to its and their use and behoof forever. And I do covenant with the said Grantee,its successors heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee,its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Elizabeth Naylor, being unmarried,

have hereunto set my hand and seal this 3rd day of July in the year of our Lord one thousand nine hundred and twenty-eight.

Signed, Sealed and Delivered in presence of

Nathan W. Thompson

Elizabeth Naylor Seal

State of Maine, CUMBERLAND, ss. July 3, 1928. Personally appeared the above named Elizabeth Naylor and acknowledged the above instrument to be her free act and deed.

Before me, Nathan W. Thompson, *Justice of the Peace.*

Received July 7, 1928, at 10 o'clock 45 m. A. M., and recorded according to the original.

Know all Men by these Presents, That

I, Samuel W. Joy, of Portland, in the County of Cumberland and State of Maine, in consideration of one dollar and other valuable considerations, paid by Maine General Hospital, a corporation organized and existing under the laws of said State of Maine, and located at said Portland, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine General Hospital, its successors and assigns forever, a certain lot or parcel of land, with the buildings thereon, situated on the northerly side of Ellsworth Street in said Portland, being numbered forty-three (43) on said Street, and bounded and described as follows; Beginning at a point thirty-two (32) feet westerly from the intersection of the northerly side line of said Ellsworth Street with the westerly side line of Charles Street; thence westerly by said Ellsworth Street forty-four (44) feet to the Arsenal lot, so called, now owned by the Maine General Hospital; thence northerly by said Arsenal or Hospital lot eighty-seven (87) feet to land now or formerly of Levi J. Jones; thence easterly thirty (30) feet to land now or formerly of William R. Naylor; thence southerly by said Naylor land eighty-seven (87) feet more or less to the first bound.

Being the same premises conveyed to me by William R. Naylor by deed dated November 5, 1905, recorded in Cumberland County Registry of Deeds, Book 776, page 200.

Also hereby conveying any right, title and interest I may have in and to said Ellsworth Street.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital, its successors heirs and assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Samuel W. Joy, having no wife,

have hereunto set my hand and seal this seventh day of July in the year of our Lord one thousand nine hundred and twenty-eight.

Signed, Sealed and Delivered in presence of

John F. Dana

Saml W. Joy Seal

State of Maine, CUMBERLAND, ss. July 7, 1928. Personally appeared the above named Samuel W. Joy and acknowledged the above instrument to be his free act and deed.

Before me, John F. Dana, *Justice of the Peace.*

Received July 7, 1928, at 10 o'clock 46 m. A. M., and recorded according to the original.

IN WITNESS WHEREOF, the said Lessor has hereunto set his hand and seal on the day and year first above written.

Signed, Sealed and Delivered in Presence of

It is further understood that no liquor, beer, or cigarette advertising shall be displayed on any structure that might be erected.

JOHN DONNELLY & SONS ------

WEST SCARBORO M.E.CHURCH ------

By A. W. Hodgman, Treas.

State of Maine. County of Cumberland,ss. March 31, 1939.

Personally appeared the above named Lessor and acknowledged the above instrument to be his free act and deed.

Before me, F. H. Tewksbury Justice of the Peace

Received March 31, 1939, at 3h 40m P. M., and recorded according to the original

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Canal Nat'l.Bk. of Port. Tr. & to Maine General Hospital Deed

KNOW ALL MEN BY THESE PRESENTS, That

WHEREAS, The Canal National Bank of Portland as Trustee having filed its Bill of Complaint against Vaughan Hall, Incorporated and Harry M. Verrill, Conservator of Casco Mercantile Trust Company dated May 20, 1938, praying for foreclosure of a certain mortgage indenture on property described in said Bill of Complaint, said mortgage indenture being dated as of the fifteenth day of September, 1925, and recorded in the office of the Registry of Deeds for Cumberland County in Book 1219 at Page 41, the Supreme Judicial Court within and for the County of Cumberland in proceedings numbered 5830 on the docket of said Court entered its decree of foreclosure and order of sale therein decreeing and ordering the sale of the property described in said mortgage and hereinafter described, and

WHEREAS, it was, among other things, ordered, adjudged and decreed by said decree of foreclosure that said sale should be made by and under the direction of Raymond J. Callahan who was thereby appointed Special Master for that purpose and who was thereby directed to make and conduct said sale and to execute a deed of conveyance of the property sold to the purchaser thereof upon an order of Court confirming such sale and upon payment or settlement of the purchase price as therein provided, and that such sale be made in the County Court House in the City of Portland, Maine, on a day and at an hour as fixed by said decree of said Supreme Judicial Court and that notice of the time, place and terms of said sale describing briefly the property to be sold and referring to said decree should be published at least once a week for three successive weeks prior to said sale in a newspaper of general circulation published in Portland, Maine, and that upon confirmation of the sale by the Court and upon payment by any purchaser of the purchase price of the property purchased by him in accordance with the decrees of said Court the Special Master should execute a deed conveying, assigning and transferring to such purchaser the property sold to him, and

WHEREAS, the Supreme Judicial Court, pursuant to said decree, duly fixed the time for said sale as February 15, 1939, at ten o'clock in the forenoon and on said date the Special Master, pursuant to the provisions of said decree dated January 17, 1939, and pursuant to order of Court dated February 15, 1939, adjourned said sale from time to time in accordance with orders and decrees of said Court until March 28, 1939, at the time and place ordered by said decree of Court dated January 17, 1939, and orders and decrees subsequent thereto and said Special Master made due advertisement of said sale in the manner described in said decree dated January 17, 1939, and posted all of said notices as required by the orders of Court made subsequent thereto and the Special Master did at the time and place and in the manner and subject to the conditions of said decree and orders of Court subsequent thereto fairly strike off and sell said property to Maine General Hospital, a corporation duly organized and existing under the laws of the State of Maine and having a usual place of business at Portland, in the County of Cumberland and State of Maine, and

WHEREAS, The Canal National Bank of Portland thereafter duly presented to the Court for confirmation the bid so received by said Special Master and the said Special Master duly made a report of said sale to said Court, and a decree of confirmation and a certain decree amending said decree of foreclosure and sale were made and entered therein on the thirty-first day of March, 1939, confirming said bid, report and sale, and making said sale subject to taxes levied against said premises or any part thereof which are or may be chargeable upon said property and directing the Special Master, upon payment of the purchase price in the manner prescribed by said decree of confirmation, to execute and deliver to said purchaser a deed or other instrument conveying, assigning and transferring to said purchaser said property so sold as aforesaid, and

WHEREAS, said Supreme Judicial Court, in accordance with said decree of confirmation, by a decree made and entered herein on the thirty-first day of March, 1939, approved the form of this deed as required by said decree of confirmation dated March 31, 1939, and

WHEREAS, said sale has been conducted and made in all respects in accordance with law and with the provisions of said decrees and order of sale;

NOW, THEREFORE, I, the said Raymond J. Callahan, in my capacity as Special Master and in consideration of these presents and of one dollar and other valuable considerations paid by Maine General Hospital, receipt whereof is hereby acknowledged, do hereby remise, release, bargain, sell and convey and quitclaim unto the said Maine General Hospital, a corporation organized and existing under the laws of the State of Maine, its successors or assigns, all the right, title and interest which said Vaughan Hall, Incorporated and/or Harry M. Verrill, Conservator of Casco Mercantile Trust Company, and all persons claiming under it or him has or have in and to the following described real estate situated in Portland, in the County of Cumberland and State of Maine, and all future rents and profits thereof arising

therefrom, subject, however, to the equity of redemption as provided in the Statutes of the State of Maine and subject also to the terms and conditions set forth in the decree of the Supreme Judicial Court dated January 17, 1939, and certain decrees dated March 31, 1939, and to any other decree which may be hereafter made which relates to the property hereby conveyed, together with the rights and privileges pertaining to said property subject to the conditions described in the decrees of the Supreme Judicial Court dated January 17, 1939, and March 31, 1939, and any unpaid taxes, but subject, however, at all times to the exceptions and provisions particularly described and set forth in the various decrees of said Supreme Judicial Court heretofore made and any that may be hereafter made during the period of redemption:

A certain lot or parcel of land with the buildings thereon situated in said Portland, and bounded and described as follows:- Beginning on the westerly side of Vaughan Street at the southeasterly corner of land now or formerly of the Portland Water District; thence southerly on Vaughan Street sixty (60) feet, more or less, to land now or formerly of John W.Deering; thence westerly by said Deering land one hundred and forty (140) feet, more or less, to land now or formerly of Portland School for Medical Instruction; thence northerly by land of said Portland School for Medical Instruction sixty (60) feet, more or less, to said land of said Portland Water District; thence easterly by said land of said Portland Water District one hundred and forty (140) feet, more or less, to the point of beginning; said lot containing eighty-four hundred (8400) square feet, more or less. Being the same premises conveyed to Vaughan Hall, Incorporated, by Ralph N. Bryant by his warranty deed dated December 19, 1913, and recorded in Cumberland County Registry of Deeds, in Book 927, Page 26.

For title to the above described premises reference is also hereby made to a certain mortgage indenture dated September 15, 1925, securing the First Mortgage Sinking Fund 5 1/2% Gold Bonds of Vaughan Hall Incorporated, said mortgage indenture being by and between said Vaughan Hall, Incorporated and The Canal National Bank of Portland, said mortgage indenture being recorded in Cumberland County Registry of Deeds in Book 1219, Page 41.

TO HAVE AND TO HOLD and possess and enjoy said property and every part and parcel thereof free from all claims, rights, interests whatsoever in or to the same by or of the said Vaughan Hall, Incorporated, its successors and assigns, or of Harry M. Verrill as Conservator of Casco Mercantile Trust Company and by or of the creditors of the Receiver appointed by the Supreme Judicial Court in the equity proceedings hereinbefore referred to, or by or of the stockholders of said Vaughan Hall, Incorporated, and by or of all persons claiming by, through or under them or any of them, including the said Receiver of said Vaughan Hall, Incorporated, and by or of all the parties to said cause hereinbefore described, but subject, however, to any and all taxes levied against said premises or any part thereof which are or may be chargeable upon said property or premises or any portion thereof prior to the

U.S.I.R. $31.50 R.J.C. 5/31/39

lien of the mortgage foreclosed in said proceedings and subject to the right of redemption of said property granted by the Statutes of the State of Maine and subject to the terms and conditions of all decrees of said Supreme Judicial Court made and entered in the cause herein referred to and to any other decree which may be hereinafter entered by said Court which relates or pertains to the property herein conveyed.

IN WITNESS WHEREOF, Raymond J. Callahan, as Special Master, has hereunto set his hand and seal this thirty-first day of March, 1939.

Signed, Sealed and Delivered in Presence of

Porter Thompson — Raymond J. Callahan Seal
Special Master

State of Maine. Cumberland,ss. March 31, 1939.

Personally appeared Raymond J. Callahan and acknowledged the foregoing instrument to be his free act and deed and his free act and deed in his said capacity.

Before me, Porter Thompson Justice of the Peace

APPROVED:

Guy H. Sturgis

Justice Supreme Judicial Court

Received March 31, 1939, at 4h -m P. M., and recorded according to the original =

Casco Mer. Tr. Co., Cons. of to Maine General Hospital Deed

WHEREAS, Harry M. Verrill of Portland, in the County of Cumberland and State of Maine, was appointed Permanent Conservator of Casco Mercantile Trust Company, a banking corporation organized and existing under the laws of the State of Maine and located at said Portland, by decree of the Supreme Judicial Court in Equity in and for the County of Cumberland and State of Maine, dated April 14, 1933, in an action in equity commenced by Sanger N. Annis against Casco Mercantile Trust Company in said Court by Bill in Equity dated March 18, 1933, and

WHEREAS, upon petition of Harry M. Verrill, Conservator as aforesaid, dated March 29, 1939, a decree issued out of said Court authorizing said Conservator to sell to Maine General Hospital, a corporation organized and existing under the laws of the State of Maine and located at said Portland, all the right, title and interest of said Casco Mercantile Trust Company in and to the following described real estate, which said decree is dated March 31, 1939, and

WHEREAS, said Conservator has sold, pursuant to the terms of said decree, to said Maine General Hospital all the right, title and interest of said Casco Mercantile Trust Company in and to the real estate hereinafter described.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS, That I, the said Harry M. Verrill, by virtue of the power and authority in me vested as aforesaid, and in my capacity as Conservator of Casco Mercantile Trust Company, and in consideration of one dollar and other valuable consideration, paid by Maine General Hospital, receipt whereof is hereby acknowledged, do hereby remise, release, bargain, sell, convey and quitclaim unto the said Maine General Hospital, its successors and assigns, all the

Know all Men by these Presents, That

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I, John T. Lennon of Portland in the County of Cumberland and State of Maine

in consideration of one dollar and other valuable considerations paid by Maine Medical Center, a corporation organized and existing under the Laws of the State of Maine and located at said Portland

the receipt whereof I do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors and assigns forever, certain lots or parcels of land with the buildings thereon situated in said Portland and bounded and described as follows:

First:

Beginning on the northerly side of Bramhall Street at the southwesterly corner of land now or formerly of Thomas H. Pratt, running thence westerly by said Bramhall Street fifty (50) feet to land now or formerly of Sophia M. Knight, and from these two points extending northerly towards Arsenal Street, holding to said width of fifty feet, and adjoining said Pratt premises on one side and said Knight premises on the other for a distance of sixty (60) feet to land now or formerly of Edward T. Burrowes. The said lot is the southerly portion of the premises conveyed to Albert B. Cole, Frank H. Cole and Warren W. Cole by Nettie E. Pierce by deed dated September 26, 1911 and recorded in the Registry of Deeds for said County of Cumberland in Book 882, Page 188. Said premises are numbered thirty (30) on said Bramhall Street.

Second:

A certain lot of land with the buildings thereon on the southerly side of Arsenal Street in said Portland bounded and described as follows:

Commencing at a point on the Westerly line of land of Maude E. Pratt at a point sixty (60) feet northerly from the northerly side of Bramhall Street, thence westerly on a line parallel with and sixty (60) feet from said Bramhall Street, fifty (50) feet, more or less, to land of Sophia M. Knight; thence northerly from these two points keeping a width of fifty (50) feet and bounded on the West by land of said Knight and on the East by land of said Pratt and George H. Fletcher, forty-nine (49) feet, more or less, to said Arsenal Street.

Being the same property conveyed to me by Harriet B. Foster by her warranty deed dated February 24, 1945 and recorded in the Cumberland County Registy of Deeds in Book 1771 Page 131.

Also conveying all my right, title and interest in and to Arsenal Street, recently abandoned by the City of Portland.

U.S.I.R.
$16.50
J.T.L.
5/5/53

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors and assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors and assigns heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said John T. Lennon and Ann C. Lennon wife of the said John T. Lennon joining in this deed as Grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises,

have hereunto set our hand_ and seal_ this fifth day of May in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

John J. Devine
to both

John T. Lennon Seal
Ann C. Lennon Seal

State of Maine, CUMBERLAND, ss. May 5, 1953. Personally appeared the above named John T. Lennon and acknowledged the foregoing instrument to be his free act and deed.

Before me, John J. Devine, Justice of the Peace

Received May 5, 19 53, at 2 o'clock 30 m. P. M., and recorded according to the original.

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Know all Men by these Presents, That

I, Donald D. McPhee of Portland in the County of Cumberland and State of Maine,

in consideration of one dollar ($1) and other valuable considerations paid by Maine Medical Center, a corporation duly organized and existing under the laws of the State of Maine and located at Portland in said County and State the receipt whereof I do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors and Assigns forever, the following described property:

A certain lot or parcel of land with the buildings thereon situated in said Portland and being the premises conveyed to me by Hope K. Fletcher by deed dated November 22, 1946 and recorded in Cumberland County Registry of Deeds in Book 1848, Page 160, in which deed said premises are described as follows:

Beginning at the Northeast corner of Sophia T. Jones lot, so-called, on Arsenal Street; thence Northeasterly on Arsenal Street fifty (50) feet to land of one Raymond; thence Southeasterly by line of Raymond forty-eight (48) feet, more or less, to land of one Haskell; thence Southwesterly along line of said Haskell land thirteen (13) feet and two (2) inches to a point; thence Northwesterly parallel to land of said Raymond three (3) feet to a point; thence Southwesterly along the line of said Haskell land thirty-six (36) feet, more or less, to land of said Jones; thence Northwesterly forty-six (46) feet, more or less to point of beginning.

Also conveying all my interest in and to said Arsenal Street, recently abandoned by the City of Portland.

U.S.I.R. $14.30 D.D.McP. 5/9/53

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors and Assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances: that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Donald D. McPhee and I, Lorraine J. McPhee wife of the said Donald D. McPhee joining in this deed as Grantor, and relinquishing and conveying my rights by descent and all other rights in the above described premises, have hereunto set our hand s and seal s this 9th day of May in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

Edward F. Dana to both

Donald D. McPhee Seal
Lorraine J. McPhee Seal

State of Maine, Cumberland, ss. May 9, 1953. Personally appeared the above named Donald D. McPhee and acknowledged the above instrument to be his free act and deed.

Before me, Edward F. Dana, Justice of the Peace

Received May 9, 1953, at 9 o'clock 37 m. A.M., and recorded according to the original. /P

Know all Men by these Presents, That

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I, Hazel B. Therio of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar and other valuable considerations paid by Maine Medical Center, a corporation duly organized and existing under the Laws of the State of Maine and located at said Portland
the receipt whereof I do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors and Assigns forever, the following described property:

A certain lot or parcel of land with the buildings thereon situated on the Westerly side of Bramhall Street in said Portland, being more particularly described in deed from Hazel E. Skillings to the Grantor, dated September 18, 1945 and recorded in Cumberland County Registry of Deeds in Book 1790, Page 500, in which deed said premises are described as follows:

A certain lot or parcel of land, with the buildings thereon situated in said City of Portland, on the Northwesterly side of Bramhall Street, bounded and described as follows: Beginning at the most easterly corner of land now or formerly of Sophia P. Jones; thence Northeasterly on said Bramhall Street fifty (50) feet to land now or formerly of one Raymond; thence Northwesterly by said Raymond land fifty-nine (59) feet; thence Southwesterly thirteen (13) feet two (2) inches, more or less, to a fence; thence Northwesterly by the line of the division fence three (3) feet two (2) inches; thence Southwesterly by said fence thirty-six (36) feet five (5) inches, more or less, to said Jones land; thence Southeasterly by said Jones land sixty-two (62) feet two (2) inches to the point begun at.

Also, all my right, title and interest in and to Arsenal Street recently abandoned by the City of Portland.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors and Assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its successors and Assigns heirs and assigns, that I am lawfully seised in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons.

U.S.I.R. $9.90 H.B.T. 5/16/53

In Witness Whereof, I the said Hazel B. Therio, being unmarried,

have hereunto set my hand and seal this 16th day of May in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

Edward F. Dana — Hazel B. Therio — Seal

State of Maine, Cumberland, ss. May 16, 1953 Personally appeared the above named Hazel B. Therio and acknowledged the above instrument to be her free act and deed.

Before me, Edward F. Dana Justice of the Peace

m Received May 16 19 53, at 10 o'clock 35 m. A. M., and recorded according to the original.

Know all Men by these Presents, That

We, Albert N. Tardif and M. Louise Tardif, both of Portland, County of Cumberland, State of Maine

in consideration of one dollar ($1.00) and other valuable considerations paid by Maine Medical Center, a Corporation established by law at said Portland

the receipt whereof we do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center its successors and Assigns forever, the following described property:

A certain lot or parcel of land with the buildings thereon situated on the northerly side of Bramhall Street in said Portland which was conveyed to the grantors by Wilhelmina M. Mantine, by deed dated September 16, 1935 and recorded in Cumberland County Registry of Deeds in Book 1478, Page 294 and therein described as follows: Beginning on the northerly side of Bramhall Street at the easterly corner of land formerly of James Miller; thence northeasterly by Bramhall Street twenty-one and seven twentieths (21 7/20) feet to a stake; thence northwesterly about one hundred eleven (111) feet to a point in the southerly side of Arsenal Street; thence southwesterly by Arsenal Street twenty-two and three quarters (22 3/4) feet to said Miller's land; thence southeasterly by said Miller's land one hundred eleven and four tenths (111 4/10) feet to the point of beginning.

Also all our right title and interest in and to Arsenal Street recently abandoned by the City of Portland.

U.S.I.R. $16.50 A.N.T.Et 6/11/53

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors and Assigns, to its and their use and behoof forever. And we do covenant with the said Grantee, its successors and Assigns, heirs and assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances: that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs, shall and will warrant and defend the same to the said Grantee, its successors and Assigns heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, We the said Albert N. Tardif and M. Louise Tardif, the said Grantors, being Husband and Wife each joining in this deed as Grantors, and each relinquishing and conveying our respective rights by descent and all other rights in the above described premises,

have hereunto set our hand s and seal s this 11th day of June in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

Edward F. Dana — Albert N. Tardif — Seal

to both — M. Louise Tardif — Seal

State of Maine, Cumberland, ss. June 11, 1953 Personally appeared the above named Albert N. Tardif and M. Louise Tardif and acknowledged the above instrument to be their free act and deed.

Before me, Edward F. Dana Justice of the Peace

Received June 12 1953, at 11 o'clock 5 m. A. M., and recorded according to the original.

Know all Men by these Presents, That

We, Fred A. Patterson and Ella H. Whidden both of Derry in the County of Rockingham and State of New Hampshire, Ruby E. MacKenzie of Raymond in said County and State and Alzo F. Patterson of Portland in the County of Cumberland and State of Maine

in consideration of One dollar ($1.00) and other valuable considerations paid by Maine Medical Center, a Corporation organized and existing under the laws of Maine and located at said Portland,

the receipt whereof we do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center, its Successors and Assigns forever, the following described property:

A certain lot or parcel of land with the buildings thereon, situated in said Portland on the northerly side of Bramhall Street and bounded and described as follows:

Beginning on the northerly side of Bramhall Street at the southwesterly corner of land formerly of Frederick A. Carle; thence running westerly by said Bramhall Street twenty-five (25) feet to a stake or point, and from these two points extending northerly adjoining said Carle land, keeping a width of twenty-five (25) feet, to Arsenal Street, being the premises conveyed to Daniel W. Patterson by Maria M. Jose by deed dated September 12, 1921 and recorded in Cumberland County Registry of Deeds in Book 1085, Page 228.

The said Daniel W. Patterson died intestate on September 3, 1952 leaving no widow and as his sole heirs-at-law, the Grantors herein.

The Grantee as part of the consideration hereof assumes and agrees to pay the taxes for the taxable year of 1953.

Also conveying all our right, title and interest in and to Arsenal Street recently abandoned by the City of Portland, Maine.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its Successors and Assigns to its and

their use and behoof forever. And we do covenant with the said Grantee, its Successors and Assigns,

heirs and assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid.

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs, shall and will warrant and defend the same to the said Grantee, its Successors and Assigns

heirs and assigns forever, against the lawful claims and demands of all persons.

U.S.I.R. 13.20
A.F.P.Et
5/20/53

In Witness Whereof, We the said Fred A.Patterson and Chrystine I.Patterson wife of the said Fred A.Patterson;Ella H.Whidden and Charles F.Whidden,husband of the said Ella H.Whidden;Ruby E.McKenzie and Elmer V.McKenzie,husband of the said Ruby E.McKenzie,and Alzo F.Patterson and Bessie E.Patterson,wife of the said Alzo F.Patterson joining in this deed as Grantors,and relinquishing and conveying our rights by descent and all other rights in the above described premises,

have hereunto set our hands and seals this twentieth day of May in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

R.E. Jensen
R.E. Jensen
Carmela Chase
Carmela Chase
Arthur K. Smith
Artour K. Smith
P. J. Campbell
P. J. Campbell

Alzo F.Patterson Seal
Bessie E. Patterson Seal
Fred A. Patterson Seal
Chrystine I. Patterson Seal
Ella H. Whidden Seal
Charles F. Whidden Seal
Ruby E. MacKenzie Seal
Elmer MacKenzie Seal

State of Maine. CUMBERLAND, ss. May 20, 1953 Personally appeared

the above named Alzo F. Patterson

and acknowledged the above instrument to be his free act and deed.

Before me, Raymond E. Jensen Justice of the Peace

Received June 12 1953, at 11 o'clock 5 m. A.M., and recorded according to the original.

Book 2133
Page 317

Know all Men by these Presents, That

We, Leola J. Noyes and William H. Noyes, Jr., both of Portland, County of Cumberland, State of Maine,

in consideration of one dollar ($1.00) and other valuable considerations paid by Maine Medical Center, a Corporation established by law in said Portland

the receipt whereof we do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors and Assigns forever, the following described property:

A certain lot or parcel of land with the buildings thereon situated in said Portland between Bramhall and Arsenal Streets adjoining land formerly belonging to Sophia P. Jones and conveyed to us by Maud L. Pillsbury by deed dated October 2, 1951, recorded in Cumberland County Registry of Deeds in Book 2060, Page 419, and therein bounded and described as follows: Beginning on the northerly side of Bramhall Street at the southwesterly corner of said Jones land; thence running westerly by said Bramhall Street twenty-five (25) feet to a stake and from these two points extending northerly adjoining said Jones land keeping a width of twenty-five (25) feet, a distance of sixty-eight feet and two inches (68' 2"), which distances are marked by stakes and which stakes are twenty-six (26) feet distant from the southerly boundary line of Arsenal Street.

U.S.I.R. $11.00
L.J.N.Et
6/12/53

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors and Assigns, to its and their use and behoof forever. And we do covenant with the said Grantee, its successors and Assigns, heirs and assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances; that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs, shall and will warrant and defend the same to the said Grantee, its successors and Assigns heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, We, the said Leola J. Noyes and William H. Noyes, Jr., the said grantors, both being unmarried

have hereunto set our hand s and seals this 12th day of June in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

Edward F. Dana — Leola J. Noyes — Seal

to both — William H. Noyes, Jr. — Seal

State of Maine, CUMBERLAND, ss. June 12, 1953 Personally appeared the above named Leola J. Noyes and William H. Noyes, Jr. and acknowledged the above instrument to be their free act and deed.

Before me, Edward F. Dana Justice of the Peace

Received June 12 19 53, at 1 o'clock 44 m. P. M. and recorded according to the original.

Know all Men by these Presents, That

Maine Medical Center a corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine

in consideration of One Dollar and other valuable considerations paid by Maine General Hospital, a corporation organized and existing under the laws of the State of Maine and located at said Portland

the receipt whereof it does hereby acknowledge, does hereby, give, grant, bargain, sell and convey unto the said Maine General Hospital, its successors and assigns forever, a certain lot or parcel of land with the buildings thereon, situated in said City of Portland, between Bramhall and Arsenal Streets, adjoining land formerly owned by John W. Yeaton, and bounded and described as follows:

Beginning in the northerly line of Bramhall Street at the southeasterly corner of said Yeaton land; thence running easterly by Bramhall Street forty (40) feet and from these two points extending northerly, adjoining said Yeaton land, and keeping said width of forty (40) feet to Arsenal Street, being the same premises described in deed of J. B. Brown to Leon M. Bowdoin in 1867 by deed recorded in Cumberland County Registry of Deeds, Book 351, Page 340.

Being the same premises conveyed to this Grantor by Frederick W. McCarthy by deed dated June 30, 1953 and recorded in said Registry of Deeds in Book 2140, Page 92.

U.S.I.R. $33.55 M.M.C. 8/18/53

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine General Hospital, its successors and assigns, to its and their use and behoof forever. And the said Grantor Corporation does hereby covenant with the said Grantee, its successors and assigns,

~~heirs and assigns~~, that it is lawfully seized in fee of the premises; that they are free of all incumbrances; that it has good right to sell and convey the same to the said Grantee to hold as aforesaid; and that it and its successors ~~heirs~~, shall and will warrant and defend the same to the said Grantee, its successors and assigns

~~heirs and assigns~~ forever, against the lawful claims and demands of all persons.

In Witness Whereof, the said Maine Medical Center has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Phillips M. Payson, its President, thereunto duly authorized,

~~hand and seal~~ this 18th day of August ~~have hereunto set~~ In the ~~year of our Lord~~ one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

Edward F. Dana

MAINE MEDICAL CENTER
CORPORATE SEAL
By Phillips M. Payson
President.

~~State of Maine~~, County of CUMBERLAND, ss. August 18, 1953. Then Personally appeared the above named Phillips M. Payson, President of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and deed, in his said capacity, and the free act and deed of said corporation.

Before me, Edward F. Dana, Justice of the Peace.

Received August 19, 1953, at 1 o'clock 40 m.P. M., and recorded according to the original. p/

Know all Men by these Presents, That

I, Henry H. Grant of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable consideration paid by Maine Medical Center, a corporation organized and existing under the Laws of the State of Maine and located at said Portland,

the receipt whereof I do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Maine Medical Center, its Successors and assigns forever, a certain lot or parcel of land with the buildings thereon situated between Bramhall and Arsenal Streets in said Portland, adjoining land now or formerly belonging to Sophia P. Jones, and more particularly bounded and described as follows:

Beginning on the northerly side line of said Bramhall Street, at the southwesterly corner of said Jones' land; thence westerly by said Bramhall Street, twenty-five (25) feet to a stake and from these two points extending northerly adjoining said Jones land, keeping the width of twenty-five (25) feet, to Arsenal Street.

Excepting and reserving however, a certain lot or parcel of land with the buildings thereon out of the aforesaid property, a conveyance by Westprom Realty Company to Maud L. and Janice M. Pillsbury by deed dated January 23, 1946 and recorded in Cumberland County Registry of Deeds in Book 1803, Page 444, to which reference may be had.

Meaning and intending to convey a parcel of land at the rear of 26 Bramhall Street, which parcel of land is approximately 26'x25' and contains a garage thereon.

Being the same premises conveyed to me by Westprom Realty Company by their warranty deed dated April 11, 1951 and recorded in said Registry of Deeds in Book 2040, Page 192.

U.S.I.R. $3.30 H.H.G. 9/4/53

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its Successors and assigns, to its and their use and behoof forever. And I do covenant with the said Grantee, its Successors and assigns, heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantee, its Successors and assigns heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Henry H. Grant and I, Gladys H. Grant, wife of the said Henry H. Grant joining in this deed as Grantor, and relinquishing and conveying my right by descent and all other rights in the above described premises, have hereunto set our hands and seals this 4th day of September in the year of our Lord one thousand nine hundred and fifty-three.

Signed, Sealed and Delivered in presence of

H. Edwin Gee

Henry H. Grant Seal
Gladys H. Grant Seal

State of Maine, Cumberland, ss. September 4, 1953. Personally appeared the above named Henry H. Grant and acknowledged the above instrument to be his free act and deed.

Before me, H. Edwin Gee, Notary Public, Notarial Seal, My Commission Expires June 29, 1956

Received September 9, 1953, at 9 o'clock 50 m. A. M., and recorded according to the original. P

Know all Men by these Presents, That

I, James S. Bell of Portland, County of Cumberland and State of Maine, Executor under the Will of Ethel B. Bell, deceased, late of Portland.

having on the 24th day of November A. D. 19 53, obtained License from the Honorable Nathaniel M. Haskell Judge of Probate, within and for the County of Cumberland and State of Maine, to sell and convey at private sale the Real Estate hereinafter described of the said Ethel B. Bell for the sum of

Eleven thousand seven hundred fifty ($11750.00) dollars

the same being an advantageous offer therefor, and having agreeably to the order and decree of said Court, given due notice upon the petition for license to make such sale, and having given the bond required by law, by virtue of the power and authority with which I am as aforesaid vested, and in consideration of the aforesaid sum of Eleven thousand seven hundred fifty ($11750.00) dollars, to me paid by Maine Medical Center, a corporation duly organized and existing by law with an office and place of business at Portland, said County and State. the receipt whereof I do hereby acknowledge, have given, granted, and sold, and by these Presents do GIVE, GRANT, SELL AND CONVEY to the said Maine Medical Center, its Successors ~~Heirs~~ and Assigns forever, the following described Real Estate, viz.:

A certain lot or parcel of land with the buildings thereon, situated on Arsenal and Brackett Streets in said Portland, bounded and described as follows:

Beginning at the southwesterly side of said Brackett Street at the northwesterly corner of a lot of land conveyed by Mary J. Raymond to George E. Raymond by deed dated November 3, 1897, and recorded in the Cumberland County Registry of Deeds in Book 657, Page 411; thence southwesterly by said last named lot forty seven (47) feet; thence northwesterly and at right angles with the last described course to said Arsenal Street; thence northeasterly by said Arsenal Street to said Brackett Street; thence southeasterly by said Brackett Street to the point of beginning.

Excepting and reserving from the southeasterly portion of said above described premises so much thereof, as was described and conveyed in a certain deed from Ella C. Gardner to Gemma A. Applebee et al., said deed being dated November 27, 1935 and recorded in the Cumberland County Registry of Deeds, Book 1485, Page 206, and subject also to such easements and rights as were therein granted to said Gemma A. Applebee et al; by said deed above referred to.

Being the same premises conveyed to Kathryn Ireland by deed of Mary Dyer dated August twenty eighth, A. D. 1950 recorded in said Registry of Deeds for the County of Cumberland in Book 2014, Page 62.

Being the same premises conveyed to Sarah Friedman by deed of Kathryn Ireland which deed is recorded in the Cumberland County Registry of Deeds in Book 2051, Page 193.

Being the same premises conveyed to Ethel B. Bell by Sarah Friedman which deed is recorded in said Registry of Deeds.

U.S.I.R. $13.20 E.B.B. Est. 11/25/53

To Have and to Hold the same, with all the privileges and appurtenances to the same belonging, in manner as aforesaid, to the said Maine Medical Center, its Successors ~~Heirs~~ and Assigns forever.

And I the said James S. Bell in my said capacity do COVENANT to and with the said Maine Medical Center, its Successors Heirs and Assigns, that I have in all things observed the rules and directions of law relative to the selling of said Estate, and have good right and lawful authority to sell and convey the same in manner aforesaid.

In Witness Whereof, I hereunto set my hand and seal in my said capacity, this 25th day of November in the year of our Lord one thousand nine hundred and fifty three

Signed, Sealed and Delivered in presence of

Morris Greenberg

Estate of Ethel B Bell
James S. Bell Seal
Executor

State of Maine, Cumberland, ss. November 25, 1953. Personally appeared the above named James S. Bell and acknowledged the foregoing ~~above~~ instrument to be his free act and deed, in said capacity.

Before me, Morris Greenberg Justice of the Peace

RECEIVED November 25 19 53, at 4 o'clock 56 m., P. M., and recorded according to the original.

(102)

Know All Men by these Presents,

That MAINE GENERAL HOSPITAL

a corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine

Maine General Hospital to Maine Medical Center

in consideration of One Dollar ($1.00) and other valuable considerations (being less than $100)

paid by MAINE MEDICAL CENTER; a corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine

the receipt whereof it does hereby acknowledge, does hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center

its successors and assigns forever,

a certain lot or parcel of land being a portion of Arsenal Street discontinued by the City of Portland and a small portion of land of the Grantor adjoining said discontinued land in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a point in the center line of discontinued Arsenal Street at its easterly extremity; thence northwesterly by said easterly extremity of discontinued Arsenal Street thirty (30) feet to land of the Grantor; thence southwesterly by land of the Grantor, being the northerly sideline of the former location of Arsenal Street and at right angles to the last described course about thirty (30) feet to the easterly face of the new Maine Medical Center building; thence northwesterly at about right angles to the last described course and by the easterly face of said new building about five (5) feet to a corner of said building; thence southwesterly by the northerly face of said new building and by a line between said new building and the old building, said old building being known as the pavilion and again by the northerly face of said new building about forty-five (45) feet to a corner of said new building; thence southeasterly by the face of said new building at about right angles to the last described course about five (5) feet to the former location of the northerly sideline of said Arsenal Street; thence southwesterly by other land of the Grantor being the northerly sideline of the former location of Arsenal Street and at about right angles to the last described course and ten (10) feet to a point; thence southeasterly at right angles to the last described course thirty (30) feet to the center line of the former location of said Arsenal Street; thence northeasterly by said center line and passing through said aforementioned new building about eighty-five (85) feet to the point of beginning.

22 **To have and to hold** the aforegranted and bargained premises with all the privileges and appurtenances thereof to the said Maine Medical Center, its successors ~~heirs~~ and assigns, to its and their use and behoof forever.

And the said Grantor Corporation does hereby COVENANT with the said Grantee, its successors ~~heirs~~ and assigns, that it is lawfully seized in fee of the premises, that they are free of all incumbrances;

that it has good right to sell and convey the same to the said Grantee to hold as aforesaid; and that it and its successors, shall and will WARRANT AND DEFEND the same to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, the said Maine General Hospital ~~Company~~ has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Phillips M. Payson, its Treasurer, thereunto duly authorized, this 9th day of July in the year one thousand nine hundred and fifty-six.

Signed, Sealed and Delivered in presence of

Edward F. Dacey

MAINE GENERAL HOSPITAL

~~Corporate~~

By Phillips M. Payson

Treasurer.

State of Maine.

County of Cumberland ss. July 9, 1956

Then personally appeared the above named

Phillips M. Payson, Treasurer of said Grantor 23
Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporation.

Before me,

Edward F. Sawyer Justice of the Peace.

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE JUL 10 1956
Received at 1 H 5 M P M, and recorded in
BOOK 2301 PAGE 21 Robert H. Carey Register

Know All Men by These Presents.

That M. S. Hancock, Inc.

M S Hancock Inc to Gordon War

a Corporation organized and existing under the laws of the State of Maine and located at Casco in the County of Cumberland and State of Maine in consideration of one dollar and other valuable consideration

paid by Benjamin H. Gordon of New Britain in the County of Hartford and State of Connecticut the receipt whereof it does hereby acknowledge, does hereby give, grant, bargain, sell and convey unto the said Benjamin H. Gordon, his heirs and assigns forever,

Three certain lots or parcels of land situate in said Casco and on the southerly shore of Coffee Pond, so-known, the lots herein conveyed being Lot #13, Lot #14 and Lot #15 and delineated on a certain plan entitled "Coffee Pond Pines, Part II" as recorded in the Cumberland County Registry of Deeds, Plan Book 44, Page 40, together with a right of user in common with others who may have been or who may hereafter be granted a similar right in and to the road or right of way leading to said lots from Route #11, so-known, said road being delineated on said plan.

It shall be a condition of this conveyance and the Grantee, for himself and his heirs, administrators, executors or assigns, agrees that no dwelling shall be erected or constructed on any of said lots unless the same shall equal or exceed the sum of $1500.00 to build exclusive, however, of any necessary outbuildings or garages.

(24)

Know all Men by these Presents,

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That the CITY OF PORTLAND, a body politic and corporate, located in the County of Cumberland and State of Maine,

Portland City of

to

Maine General Hospital

Q C

in consideration of One ($1.00) Dollar and other valuable considerations, the total of which is less than One hundred ($100.00) Dollars

paid by Maine General Hospital, a corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine,

the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey, and forever quit-claim unto the said

Maine General Hospital, its successors and assigns forever,

A certain lot or parcel of land situated in said Portland and bounded and described as follows:

Beginning at the point of intersection of the Northwesterly side line of Ellsworth Street extended in a Southwesterly direction and the Southwesterly side line of Charles Street; thence Southwesterly along a continuation of the Northwesterly side line of Ellsworth Street extended, a distance of thirty-eight (38) feet, more or less, to a point; thence in a Southeasterly direction parallel to and fifty (50) feet measured perpendicularly Southwesterly of the Northeasterly side line of Charles Street Extension, so-called, a distance of one hundred fifty-five (155) feet, more or less, to the Northerly terminus of Brackett Street as established and renamed by the City Council of the City of Portland; thence Northeasterly along the line terminating said Brackett Street a distance of thirty-eight (38) feet, more or less, to the point of intersection formed by the above-mentioned line and the Southwesterly side line of Charles Street Extension, so-called; thence Northerly along the Southwesterly side line of Charles Street Extension, so-called, a distance of one hundred fifty-five (155) feet, more or less, to the point of beginning.

Being the same premises conveyed to the Grantor by warranty deed of the Grantee dated April 9, 1954, recorded in Cumberland County Registry of Deeds in Book 2173, Page 412.

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To have and to hold the same, together with all the privileges and appurtenances thereunto belonging, to it the said

Maine General Hospital, its successors

~~Heirs~~ and Assigns forever.

And the said Grantor Corporation does ~~covenant~~ with the said

Maine General Hospital, its successors

~~Heirs~~ and Assigns, that it will ~~Warrant~~ and ~~Forever Defend~~ the said premises to it the said Grantee, its successors ~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

In Witness Whereof, the said CITY OF PORTLAND

has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Edwin T. Simmons, Acting City Treasurer ~~xxxxx~~ thereunto duly authorized, this Fifteenth day of August in the year one thousand nine hundred and fifty-six.

Signed, Sealed and Delivered
in presence of

M. Jane King

CITY OF PORTLAND

By Edwin T. Simmons
Acting City Treasurer

(CORPORATE SEAL)

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE AUG 21 1956
Received at 1 H — M and recorded in
BOOK 2308 PAGE 161

State of Maine,
Cumberland } ss. August 15, 1956.

Personally appeared the above named Edwin T. Simmons, Acting City Treasurer of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporation.

Before me

Justice of the Peace

Know all Men by these Presents, That

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We, Albert E. Doak and Amelia Doak, both of Portland, County of Cumberland and State of Maine,
in consideration of one dollar and other valuable considerations
paid by MAINE GENERAL HOSPITAL, a corporation organized and existing under the laws of the State of Maine, and having its principal place of business at said Portland,

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said MAINE GENERAL HOSPITAL, its successors and assigns, forever,

A certain lot or parcel of land with the buildings thereon, situated on the westerly side of Charles Street in said Portland, bounded and described as follows: Beginning at a fence post standing on the westerly side line of Charles Street and distant northerly seventy-three and eighty-four hundredths (73.84) feet from the northwesterly corner of Ellsworth and Charles Streets; thence northerly by said Charles Street forty (40) feet to land now or formerly of Frank Abbott; thence westerly by said Abbott's land seventy-four and fifty-six hundredths (74.56) feet to land of the said grantee; thence by land of said grantee southerly forty (40) feet to land now or formerly of W. R. Naylor; thence easterly by said Naylor's land seventy-four and forty-two hundredths (74.42) feet to the point of beginning.

Being the same premises conveyed to these grantors by Henry T. Orlando by deed dated May 29, 1951, and recorded in Cumberland County Registry of Deeds in Book 2044, Page 288.

The grantee corporation herein assumes and agrees to pay the 1957 real estate taxes as part consideration for this transfer.

Doak & to Maine General Hospital -- War

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said MAINE GENERAL HOSPITAL, its successors

~~and~~ assigns, to its and their use and behoof forever. And we do covenant with the said Grantee, its successors ~~and~~ assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid; that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs and assigns shall and will warrant and defend the same to the said Grantee, its successors ~~and~~ assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, we, the said Albert E. Doak and Amelia Doak, husband and wife,

joining in this deed as Grantors, and relinquishing and conveying our rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this third day of May in the year of our Lord one thousand nine hundred and fifty-seven.

Signed, Sealed and Delivered in presence of

Edward B. Perry
E. Bailey

Albert E. Doak
Amelia Doak

State of Maine, Cumberland ss. May 3, 1957.

Personally appeared the above named Albert E. Doak

and acknowledged the foregoing instrument to be his free act and deed.

Before me, Edward B. Perry NOTARY PUBLIC.

STATE OF MAINE, CUMBERLAND COUNTY, SS. REGISTRY OF DEEDS

Received MAY 3 1957 at 2 o'clock 35 m. P.M., and recorded in BOOK 2349 PAGE 229 Attest: Martha H. S. Bailey Register's Clerk

$6.05

Book 2619
Page 499

Grant
&
to
Maine
Medical
Center
--
War

Know All Men by These Presents,

499

That We, Henry H. Grant and Gladys H. Grant, both of Portland in the County of Cumberland and State of Maine,

in consideration of one ($1.00) dollar and other valuable considerations

paid by Maine Medical Center, a corporation duly organized and existing under the laws of the State of Maine and located at said Portland,

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors and assigns forever, a certain lot or parcel of land with the buildings thereon, situated in Portland in the County of Cumberland and State of Maine, on the northwesterly side of Bramhall Street, bounded and described as follows:

Commencing at the southwesterly corner of land, now or formerly, of James Miller and Charlotte Johnson on Bramhall Street; thence northwesterly by land of said James Miller and Charlotte Johnson, sixty (60) feet to land formerly of William J. Knowlton; thence southwesterly along said Knowlton land, parallel with said street, fifty-five (55) feet to a corner of land formerly of William J. Knowlton; thence parallel with first mentioned line sixty (60) feet, more or less, to said street; thence northeasterly by said street fifty-five (55) feet to the place of beginning.

Being the same premises conveyed to us by Russell Fanning by deed recorded in Cumberland County Registry of Deeds in Book 1833, Page 415, and are conveyed subject to the conditions contained in said deed.

The Grantee herein, as part of the consideration hereof, assumes and agrees to pay taxes for the taxable year 1961.



500

We have and to hold the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said

Maine Medical Center, its successors

~~heirs~~ and assigns, to its and their use and behoof forever.

And we do covenant with the said Grantee, its successors ~~heirs~~ and assigns, that we are lawfully seized in fee of the premises, that they are free of all incumbrances;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs shall and will Warrant and Defend the same to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, We the said Henry H. Grant

and Gladys H. Grant, being husband and

wife ~~xxxxxxxxxx~~

joining in this deed as Grantor s, and relinquishing and conveying all right by descent and all other rights in the above described premises, have hereunto set our hand s and seals this thirty-first day of July in the year of our Lord one thousand nine hundred and sixty-one.

Signed, Sealed and Delivered
in presence of

Geraldine F. Wall — Henry H. Grant

R. E. Jensen — Gladys H. Grant

State of Maine. Cumberland, ss. July 31, 1961.

Personally appeared the above named Henry H. Grant

and acknowledged the foregoing instrument to be his free act and deed.

Before me,

Raymond E. Jensen
Justice of the Peace
~~Notary Public~~

AUG 4 1961
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 10 H 28 M A M, and recorded in
BOOK 2619 PAGE 499 Sewall R. Thompson Register

Know All Men by These Presents,

369

That Sewall M. Hobson, 2nd, of Portland, County of Cumberland and State of Maine

in consideration of one dollar and other valuable consideration

paid by Maine Medical Center, a corporation duly organized and existing under the laws of the State of Maine with its principal office in said Portland

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors and assigns forever, a certain lot or parcel of land with the buildings thereon, situated on the northwesterly side of Bramhall Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at the intersection of the northwesterly side line of Bramhall Street with the easterly side line of Western Promenade; thence northeasterly by Bramhall Street One Hundred Four and one-tenth (104.1) feet to the southerly corner of land conveyed by John W. Yeaton to William J. Knowlton, by deed dated April 4, 1885, and recorded in Cumberland County Registry of Deeds, in Book 517, Page 86; thence northwesterly at right angles with Bramhall Street and by said Knowlton land Sixty (60) feet to the southeasterly side line of land conveyed by John W. Yeaton to William J. Knowlton by deed dated June 6, 1882, and recorded in said Registry of Deeds, in Book 488, Page 204; thence southwesterly by said Knowlton land Forty-one and seven tenths (41.7) feet to the easterly side line of Western Promenade at a point Seventy-seven and five tenths (77.5) feet southerly thereon from the southeasterly side line of Arsenal Street; thence southerly by Western Promenade Eighty-six and seventy-eight hundredths (86.78) feet to the point of beginning.

For Grantors title reference is made to the will of Annie H. Dana, and abstract of which is recorded in said Registry of Deeds, in Book 2423, Page 273, and to a certain deed from Saint Germain Foundation et als. dated February 1, 1960, and recorded in said Registry of Deeds in Book 2526, Page 80.

To have and to hold the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors

heirs and assigns, to it and their use and behoof forever.

And I do covenant with the said Grantee, its successors heirs and assigns, that I am lawfully seized in fee of the premises, that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and any heirs shall and will Warrant and Defend the same to the said Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof. We the said Sewall M. Hobson, 2nd

and Anne S. Hobson

wife of the said Sewall M. Hobson, 2nd

joining in this deed as Grantor, and relinquishing and conveying her right by descent and all other rights in the above described premises, have hereunto set our hands and seals this Tenth day of July in the year of our Lord one thousand nine hundred and sixty-two.

Signed, Sealed and Delivered
in presence of

Gerald S Cope
to both

Sewall M. Hobson, 2nd (S)
Anne S Hobson (S)



State of Maine. Cumberland ss. July 10th 19 62.

Personally appeared the above named Sewall M. Hobson, 2nd

and acknowledged the foregoing instrument to be his free act and deed.

Before me, Gerald S Cope
Justice of the Peace
~~Notary Public~~

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at JUL 10 1962 11 H 51 M. M. and recorded in
BOOK 2185 PAGE 369 Register

326 (108)

Know all Men by these Presents.

That I, VINCENT C. NEWTON of Portland in the County of Cumberland and State of Maine

Newton

to

Maine General Hospital

War

in consideration of One Dollar ($1.00) and other valuable considerations

paid by MAINE GENERAL HOSPITAL, a corporation organized and existing under the laws of Maine and located at Portland in the County of Cumberland and State of Maine,

the receipt whereof I do hereby acknowledge, do hereby

give, grant, bargain, sell and convey, unto the said Maine General Hospital,

its successors ~~heirs~~ and assigns forever,

a certain lot or parcel of land with the buildings thereon situated on the westerly side of Charles Street in said Portland, bounded and described as follows:

Beginning on the westerly side line of said Charles Street at the northeasterly corner of land formerly of John M. Jones, now of Maine General Hospital; thence running northerly by said street thirty-eight (38) feet to land formerly occupied by one Graham, now owned by Maine General Hospital; and from these two points extending back westerly at right angles from said street keeping the width of thirty-eight (38) feet and bounded southerly by said Jones land and northerly by said Graham land about seventy-four and two tenths (74.2) feet to the Arsenal Lot, so-called, now of Maine General Hospital; being the same premises conveyed to me by Charles H. Abbott et al by deed dated February 10, 1944, recorded in Cumberland County Registry of Deeds in Book 1737, Page 278.



To Have and to Hold the aforegranted and bargained premises with all the privileges and appurtenances thereof to the said Maine General Hospital, its successors

heirs and assigns, to its and their use and behoof forever.

And I do COVENANT with the said Grantee, its successors and assigns, that I am lawfully seized in fee of the premises that they are free of all encumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will WARRANT and DEFEND the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I the said Vincent C. Newton, being unmarried

have hereunto set my hand and seal this 15th day of June in the year of our Lord one thousand nine hundred and sixty-five.

Signed, Sealed and Delivered in presence of

Edward J. McGoldrick

Vincent C. Newton (L.S.)

State of Maine, Cumberland } ss. June 15, 1965.

Personally appeared the above named Vincent C. Newton and acknowledged the above instrument to be his free act and deed.

Before me, Edward J. McGoldrick
Notary Public

EDWARD J. McGOLDRICK NOTARY PUBLIC MAINE MY COMMISSION EXPIRES OCTOBER 8, 1972

STATE OF MAINE
CUMBERLAND, ss. REGISTRY OF DEEDS
Received at 1 H. 26 M. P. M. on JUN 15 1965 and recorded in Book 2901 Page 326. Attest
Register

(184)
EXECUTOR'S AND TRUSTEE'S DEED
[WHEN THE WILL AUTHORIZES A SALE]

927

Know all Men by these Presents.

That I, HELEN M. GRIFFIN

of Portland in the county of Cumberland

sole acting executor of the last will and testament

of Mary Davis late of Portland

deceased, testate, by virtue of the authority to me given by

the said Mary Davis in her last will and

testament, in my capacity of executor as afore-

said, and in consideration of One Dollar ($1.00) and other

valuable considerations

to me paid by MAINE MEDICAL CENTER, a corporation organized under the laws of Maine and situated in Portland

the receipt whereof is hereby ac-

knowledged, do hereby sell and convey unto the said Maine Medical Center, its successors

and assigns, the following described real estate, which was

the property of the said Mary Davis.

A certain lot or parcel of land with the buildings thereon situated in Portland on the northerly side of Brackett Street, bounded and described as follows:

Beginning at the intersection of the northerly side of Brackett Street with the westerly side of Russell Street; thence running northeasterly by Russell Street thirty-seven (37) feet, more or less, to land formerly owned by Hobart W. Richardson; thence running northwesterly by said Richardson land seventy-four (74) feet, more or less, to land formerly owned or occupied by W. S. Dunn; thence southwesterly by the line of said Dunn's land forty-one (41) feet, more or less, to a lane; thence southeasterly by said lane forty-one (41) feet, more or less, to Brackett Street; thence easterly by Brackett Street thirty-seven (37) feet, more or less, to the point of beginning.

Being the same premises conveyed to Mary Davis by Harry E. Davis by deed dated March 18, 1915, recorded in Cumberland County Registry of Deeds in Book 945, Page 109.

Reference is made to Will of said Mary Davis, abstract of which is recorded in said Registry of Deeds in Book 3025, Page 28.

Davis Est

to

Maine Medical Center

Exec

928 To have and to hold the above-granted premises unto the said Maine Medical Center, its successors and assigns forever. And I the said Helen M. Griffin, in my said capacity, do hereby covenant to and with the said Maine Medical Center, its successors and assigns, that I am the lawful executor of the last will and testament of the said Mary Davis ; that I have power under said will to sell as aforesaid; and that in making this conveyance, I have in all respects, acted in pursuance of the authority granted in and by the said last will and testament.

In Witness Whereof, I the said Helen M. Griffin in my said capacity of executor as aforesaid have hereunto set my hand and seal this 31st day of March in the year of our Lord one thousand nine hundred and sixty-six.

Signed, Sealed and Delivered in presence of

Helen M Griffin

State of Maine, Cumberland ss. March 31 1966.

Then personally appeared the above named Helen M. Griffin and acknowledged the above instrument to be her free act and deed in her said capacity.

Before me,

Justice of the Peace.

MAR 31 1966
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 3 h 55 m, and recorded in
BOOK 2927 PAGE 927 Register

2081

722

Know all Men by these Presents,

J B Brown & Sons to Maine Medical Center

Q C

That J. B. BROWN & SONS, a corporation organized and existing under the laws of the State of Maine, and located at Portland in the County of Cumberland and State of Maine in consideration of one dollar and other valuable considerations, being less than $100.00 paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine, and located at said Portland, the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey, and forever quit-claim unto the said MAINE MEDICAL CENTER, its successors and assigns forever,

All its right, title and interest in a strip of land, in the City of Portland, County of Cumberland and State of Maine, said strip being that portion of Charles Street lying between Brackett Street and Ellsworth Street bounded as follows: Beginning at a point on the southeasterly line of Ellsworth Street distant southwesterly One Hundred Sixty-three and seven tenths (163.7) feet from a point in said street line Fifty-seven (57) feet at right angles from a stone monument on three feet offset at the northwest corner of Ellsworth and Wescott Streets; thence running southeasterly making an included angle with the northwesterly direction of Ellsworth Street of One Hundred and One degrees and Twenty minutes (101° 20') a distance of One Hundred and Sixteen (116) feet, more or less, to the northerly line of Brackett Street near Arsenal Street. Said strip is Thirteen (13) feet wide and lies on the southerly side of the above described line.

To Have and to Hold the same, together with all the privileges and appurtenances thereunto belonging, to the said MAINE MEDICAL CENTER, its successors and assigns forever.

In Witness Whereof, the said J. B. BROWN & SONS has caused this instrument to be sealed with its corporate seal and signed in its corporate name by , its thereunto duly authorized, this 4th day of May in the year of our Lord one thousand nine hundred and sixty-six.

Signed, Sealed and Delivered in presence of

Ruth M. Brown

J. B. BROWN & SONS

By Lyman A. Cousens Jr. Treas.
Philip G. Clifford Director
(Corporate Seal)

May 4 1966

State of Maine, Cumberland ss. 19 66.

Personally appeared the above named Lyman A. Cousens Jr. & Philip G. Clifford of said Grantor Corporation, as aforesaid, and acknowledged the foregoing instrument to be his free act and deed, in his said capacity, and the free act and deed of said corporation.

Before me, Nellie H. Foster NOTARY PUBLIC ~~JUSTICE OF THE PEACE.~~

STATE OF MAINE, CUMBERLAND COUNTY, SS. REGISTRY OF DEEDS
Received MAY 4 1966 at 3 o'clock 17 m. P. M., and recorded
in BOOK 2955 PAGE 722 Attest: Samuel R. Thompson Register.

Know all Men by these Presents, That

We, FRANK S. NEUTS and DELLA J. NEUTS, both of Portland, in the County of Cumberland and State of Maine

in consideration of one dollar and other valuable consideration s paid by JOHN P. CONSTANTINE and CHARLENE M. CONSTANTINE, both of said Portland

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said

JOHN P. CONSTANTINE and CHARLENE M. CONSTANTINE, as joint tenants and not as tenants in common, their heirs and assigns forever.

A certain lot or parcel of land, with the buildings thereon, situated on Charles Street, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning on the westerly side of Charles Street at the northerly corner of land formerly owned by C. B. Saunders; thence westerly by said Saunders northerly line seventy-five (75) feet, more or less, to land of the Maine General Hospital; thence northerly by line of said Hospital land thirty-six (36) feet to a point; thence easterly on a line parallel with Saunders northerly line seventy-five (75) feet, more or less, to the westerly side line of Charles Street; thence southerly by said Charles Street thirty-six (36) feet to the point begun at.

Being the same premises conveyed to us by Maine General Hospital by deed dated January 30, 1962 and recorded in Cumberland County Registry of Deeds in Book 2637, Page 19.

This conveyance is made subject, however, to the common passageway established by agreement between Maine General Hospital and Clarence D. Read, et al, dated October 29, 1954 and recorded in said Registry of Deeds in Book 2203, Page 413.

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said JOHN P. CONSTANTINE and CHARLENE M. CONSTANTINE, as joint tenants and not as tenants in common, their

heirs and assigns, to them and their use and behoof forever. And we do covenant with the said Grantees, their heirs and assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances, except as aforesaid, that we have good right to sell and convey the same to the said Grantees to hold as aforesaid; and that we and our heirs and assigns shall and will warrant and defend the same to the said Grantees, their heirs and assigns forever, against the lawful claims and demands of all persons, except as aforesaid.

In Witness Whereof, we, the said FRANK S. NEUTS and DELLA J. NEUTS, being husband and wife,

joining in this deed as Grantors, and relinquishing and conveying our respective rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this second day of March in the year of our Lord one thousand nine hundred and sixty-seven.

Signed, Sealed and Delivered in presence of

Frank S. Neuts

Della J. Neuts

State of Maine, Cumberland, ss. March 2, 1967.

Personally appeared the above named Frank S. Neuts and Della J. Neuts and acknowledged the foregoing instrument to be their free act and deed.

Before me, Notary Public, Justice of the Peace.

STATE OF MAINE, CUMBERLAND COUNTY, ss. REGISTRY OF DEEDS

Received MAR 3 1967 at 11 o'clock 2 m. A. M., and recorded in BOOK 2988 PAGE 139 Attest Leonard R. Thayer Register.

238

KNOW ALL MEN BY THESE PRESENTS

THAT OLD COLONY TRUST COMPANY a Corporation located in Boston, County of Suffolk and Commonwealth of Massachusetts, sole surviving Trustee under a Trust Agreement created by ALICE A. BURKITT late of Portland and dated March 30, 1961 by virtue of the authority to it given by said Trust Agreement in its capacity of Trustee as aforesaid, and in consideration of One Dollar ($1.00) and other valuable considerations to it paid by MAINE MEDICAL CENTER of Portland, Maine, the receipt whereof is hereby acknowledged, does hereby sell and convey unto the said Maine Medical Center its successors and assigns forever, the following described real estate, which was the property of Alice A. Burkitt late of Portland, situated in said Portland, Maine and bounded as follows:

a certain lot or parcel of land with the buildings thereon, situated in said Portland, bounded and described as follows: Beginning at a point on the easterly side of Western Promenade, which point is eighty-five (85) feet from the intersection of the northeasterly side line of said Promenade with the northwesterly side line of Bramhall Street; thence northerly by the line of said Promenade seventy-seven and five tenths (77.5) feet, more or less, to Arsenal Street; thence northeasterly by said Arsenal Street seventy-four and one tenths (74.1) feet, more or less, to land now or formerly of William J. Miller et al; thence southeasterly at right angles to Arsenal Street by said Miller land fifty-five and five tenths (55.5) feet, more or less, to land formerly of Hiram Knowlton; thence southwesterly parallel with said Arsenal Street one hundred and twenty-seven (127) feet, more or less, to the Western Promenade and point of beginning, containing fifty-six hundred (5600) square feet more or less.

Also another parcel of land adjoining the above described lot, and bounded and described as follows: Commencing at a point on the northwesterly side of Bramhall Street, which point is the northeasterly corner of land of Frederick C. Hussey et al, and ninety-eight and two tenths (98.2) feet, more or less, from the intersection of said northwesterly side line of Bramhall Street with the easterly side line of the Western Promenade; thence northeasterly on said Bramhall Street thirty-three and five tenths (33.5) feet to a point and land formerly of Hiram Knowlton, and from these two points extending northwesterly keeping a width of thirty-three and five

tenths (33.5) feet a distance of sixty (60) feet to the first parcel herein conveyed, containing two thousand and ten (2010) square feet.

Meaning and intending to convey and hereby conveying the real estate acquired by Alice A. Burkitt by Warranty Deed of Good Will Home Association dated December 11, 1930 recorded in the Cumberland County Registry of Deeds Book 1361, page 373; said real estate having been devised to the Grantor as Trustee by the Will of Alice A. Burkitt duly probated in the Cumberland County Probate Court.

TO HAVE AND TO HOLD the above-granted premises unto the said Maine Medical Center its successors and assigns forever. And the said Old Colony Trust Company in its said capacity does hereby covenant to and with the said Maine Medical Center its successors and assigns that it is the sole surviving Trustee under said Trust Agreement; that it has power under said Trust Agreement to sell as aforesaid; and that in making this conveyance it has in all respects acted in pursuance of the authority granted in and by said Trust Agreement.

IN WITNESS WHEREOF, the said Old Colony Trust Company in its said capacity as Trustee as aforesaid has caused this instrument to be signed in its corporate name and sealed with its corporate seal by S. Vincent its Trust Officer Vice President thereunto duly authorized this 4th day of February 1969.

Witness:

OLD COLONY TRUST COMPANY

By S. Vincent
Its Trust Officer
Vice President

COMMONWEALTH OF MASSACHUSETTS
SUFFOLK, SS. February 4, 1969.

Then personally appeared the above-named S. Vincent who made oath that the foregoing instrument was his free act and deed and the free act and deed of the Grantor corporation in its said capacity as Trustee as aforesaid.

Before me,

Notary Public

Mary F. Archoska
NOTARY PUBLIC
My commission expires May 28, 1971

CERTIFICATE OF TRUSTEE

I, JAMES R. KINGSBURY of Newton Massachusetts, Trust Officer of Old Colony Trust Company of Boston, Massachusetts, hereby certify that Old Colony Trust Company became a Co-Trustee of a certain Revocable Inter Vivos Trust created by ALICE A. BURKITT with said Old Colony Trust Company and NORMAN A. BURKITT as Co-Trustees under a Trust Agreement dated March 30, 1961;

That Norman A. Burkitt is deceased and the Old Colony Trust Company is now acting as sole surviving Trustee;

That said Trust is no longer revocable inasmuch as the Settlor who reserved the power of revocation has since died;

That among the powers given to the Trustees is the following:

> "The Trustees, in addition to and not in limitation of all common law and statutory authority, shall have power, as to any real or personal property in the trust fund or any part thereof, to mortgage, to lease with or without option to purchase and although for a term extending beyond the termination of the trust, to sell in whole or in part at public or at private sale without approval of any court and without liability upon any person dealing with the Trustees to see to the application of any money or other property delivered to them; . . ."

Dated at Boston, Massachusetts, this 4TH day of February 1969.

James R. Kingsbury

COMMONWEALTH OF MASSACHUSETTS
SUFFOLK, SS.

February 4, 1969.

Personally appeared the above named James R. Kingsbury and made oath to the truth of the foregoing certificate by him subscribed.

Before me,

Mary F. Archoska
Notary Public

Mary F. Archoska
NOTARY PUBLIC
My commission expires May 28, 1971

FEB 17 1969
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 11 & 35 A.M. and recorded in
BOOK 3073 PAGE 669 Samuel R. Kingsbury Register

No. 184

Know All Men by these Presents,

That I, CLARA G. READ, of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable considerations

paid by MAINE MEDICAL CENTER, a Maine corporation having a place of business in said Portland, in said County and State,

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center,

its Successors Heirs and Assigns forever,

the following described property:

A certain lot or parcel of land, with the buildings thereon, situated on the southwesterly side of Charles Street in said Portland, bounded and described as follows:

Beginning on said southwesterly side of Charles Street at a point thirty (30) feet northwesterly by said Street from the northeasterly corner of land formerly of Charles A. Donnell; thence northwesterly by said Street thirty (30) feet; thence southwesterly parallel with the line of said Donnell land seventy-four and two-tenths (74.2) feet to land formerly known as the Arsenal property; thence southeasterly by said Arsenal lot thirty (30) feet; thence northeasterly parallel with said Donnell land seventy-four and two-tenths (74.2) feet to the point of beginning.

Being the same premises conveyed to this Grantor and Clarence D. Read, as joint tenants, by Grace R. Loomis by deed dated September 1, 1948 and recorded in Cumberland County Registry of Deeds in Book 1926, Page 336. The said Clarence D. Read having deceased and his estate is of record in the Registry of Probate for Cumberland County, Maine.

The Grantor herein shall have the right to occupy the premises hereby conveyed until September 15, 1969.

STATE OF MAINE
REAL ESTATE TRANSFER TAX
Bureau of Taxation
13.75

To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said Maine Medical Center, its Successors

~~Heirs~~ and Assigns, to them and their use and behoof forever.

And I do **covenant** with the said Grantee, its Successors ~~Heirs~~ and Assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my Heirs, shall and will **Warrant and Defend** the same to the said Grantee, its Successors

~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Clara G. Read, being a widow,

~~and~~ ~~wife of the said~~

~~joining in this deed as Grantor and relinquishing and conveying~~

~~right by descent and all other rights in the above~~

~~described premises~~, have hereunto set my hand and seal this 22nd day of July in the year of our Lord one thousand nine hundred and sixty-nine.

Signed, Sealed and Delivered in presence of

John W. Sturgis Clara G. Read

State of Maine, CUMBERLAND } ss. July 22, 1969.

Personally appeared the above named

CLARA G. READ

and acknowledged the above instrument to be her free act and deed.

Before me, John W. Sturgis
Justice of the Peace

JUL 23 1969
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 10 h 58 m. and recorded in
BOOK 3095 PAGE 34 Gerard R. Thompson Register

21-1

47333 No. 116

Know All Men by these Presents,

That We, WILLIAM C. GOKEY and SUZANNE E. GOKEY, both of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar ($1.00) and other valuable considerations

paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of Maine and located at Portland, County of Cumberland and State of Maine

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center,

its successors Heirs and Assigns forever,

the following described property:

A certain lot or parcel of land with the buildings thereon situated on the southeasterly side of Ellsworth Street in said Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at the northeasterly corner of a lot of land on Bramhall's Hill which John B. Brown sold to one Tuttle; thence northeasterly on said Ellsworth Street forty (40) feet; thence southeasterly about seventy-four (74) feet to land formerly of Davis; thence southwesterly by said Davis's land to land formerly of said Tuttle forty (40) feet; thence northwesterly to said Ellsworth Street, the bounds begun at, seventy-four (74) feet.

Being the same premises conveyed to William C. Gokey and Suzanne E. Gokey by Thelma A. Barter, by deed dated June 19, 1968, recorded in Cumberland County Registry of Deeds in Book 3045, Page 187.

This conveyance is made subject to taxes for the year 1969 which the Grantee assumes and agrees to pay.

STATE OF MAINE
REAL ESTATE TRANSFER TAX
$18.15

To have and to hold the aforegranted and bargained premises, 245
with all privileges and appurtenances thereof to the said
Maine Medical Center, its successors

~~Heirs~~ and Assigns, to its and their use and behoof
forever.

And we do covenant with the said Grantee, its successors ~~Heirs~~
and Assigns, that we are lawfully seized in fee of the premises;
that they are free of all incumbrances;
that we have good right to sell and convey the same to the said
Grantee to hold as aforesaid; and that we and our Heirs, shall
and will Warrant and Defend the same to the said Grantee,
its successors
~~Heirs~~ and Assigns forever, against the lawful claims and demands
of all persons.

In Witness Whereof, we the said William C. Gokey
and Suzanne E. Gokey, being husband and wife

~~xxxx~~ ~~xxxxxxxxxxxxxxxxxxxx~~

~~joining in this deed as Grantor, and relinquishing and conveying~~
~~rights by dower and all other rights in the above~~
~~described premises~~, have hereunto set our hands and seals this
11th day of August in the year of our Lord
one thousand nine hundred and sixty-nine.

Signed, Sealed and Delivered
in presence of

Edward F. Jones

William C. Gokey
Suzanne E. Gokey

State of Maine,
Cumberland } ss.

August 11, 1969

Personally appeared the above named
William C. Gokey
and acknowledged the above instrument to be his free act and
deed.

Before me, Edward F. Jones
Justice of the Peace

AUG 11 1969
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 2 H 24 M, and recorded in
BOOK 3097 PAGE 244 Edward R. Thompson Register

(106)

396 [illegible]

Know all Men by these Presents,

That JOHN P. CONSTANTINE and CHARLENE M. CONSTANTINE, both of Portland in the County of Cumberland and State of Maine

in consideration of One Dollar ($1.00) and other valuable considerations

paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of Maine, and located at Portland, County of Cumberland and State of Maine

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said Maine Medical Center, its successors ~~heirs~~ and assigns forever,

a certain lot or parcel of land, with the buildings thereon, situated on Charles Street, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning on the westerly side of Charles Street at the northerly corner of land formerly owned by C. B. Saunders; thence westerly by said Saunders northerly line seventy-five (75) feet, more or less, to land of the Maine General Hospital; thence northerly by line of said Hospital land thirty-six (36) feet to a point; thence easterly on a line parallel with Saunders northerly line seventy-five (75) feet, more or less, to the westerly side line of Charles Street; thence southerly by said Charles Street thirty-six (36) feet to the point begun at.

Being the same premises conveyed to us by Frank S. Neuts, by deed dated March 2, 1967, recorded in Cumberland County Registry of Deeds in Book 2988, Page 139.

This conveyance is made subject, however, to the common passageway established by agreement between Maine General Hospital and Clarence D. Read et al, dated October 29, 1954, recorded in said Registry of Deeds in Book 2203, Page 413.

STATE OF MAINE
REAL ESTATE TRANSFER TAX
Bureau of Taxation
$1.85

397

To have and to hold the aforegranted and bargained premises with all the privileges and appurtenances thereof to the said Maine Medical Center, its successors

~~xxxxx~~ and assigns, to its and their use and behoof forever.

And we do COVENANT with the said Grantee, its successors ~~xxxxx~~ and assigns, that we are lawfully seized in fee of the premises that they are free of all encumbrances except as aforesaid;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs shall and will WARRANT and DEFEND the same to the said Grantee, its successors ~~xxxxx~~ and assigns forever, against the lawful claims and demands of all persons, except as aforesaid.

In Witness Whereof, we the said John P. Constantine and Charlene M. Constantine, being husband and wife,

~~and~~

~~wife~~ ~~xxxxxxxxxx~~

~~[illegible]~~

~~[illegible]~~

~~[illegible]~~ have hereunto set our hands and seals this 7th day of November in the year of our Lord one thousand nine hundred and sixty-nine.

Signed, Sealed and Delivered in presence of

Edward F. Sims to both

John P. Constantine

Charlene M. Constantine

State of Maine, Cumberland } ss. 19 69.

Personally appeared the above named John P. Constantine and acknowledged the above instrument to be his free act and deed.

NOV 7 1969 Before me, Edward F. Sims

Justice of the Peace.

Register ~~Notary Public.~~

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE

Received at 11 M 18 M. and recorded in

BOOK 3108 PAGE 396 Edward R. [illegible]

No. 108
14804

Know All Men by these Presents.

That I, AGNES E. TWEEDIE, formerly AGNES E. BROWN, of Portland, County of Cumberland and State of Maine

in consideration of One Dollar ($1.00) and other valuable consideration

paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine and having its principal place of business at Portland, County of Cumberland and State of Maine

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said MAINE MEDICAL CENTER,

its successors ~~Heirs~~ and Assigns forever,

the following described property: A certain lot or parcel of land, with the buildings thereon, situated in the City of Portland, County of Cumberland and State of Maine, on the corner of Brackett and Russell Streets and bounded as follows: Southwesterly by said Brackett Street; northwesterly by said Russell Street; northeasterly by land formerly of J. K. Emery and southeasterly by land now or formerly of Annie F. Chapman; containing about twenty-one hundred and fifty-one (2151) square feet.

Being the same premises conveyed to the Grantor herein and her late husband, Kenneth C. Brown, by deed dated January 22, 1962 and recorded in the Cumberland County Registry of Deeds, Book 2655, Page 344.

This conveyance is made subject to taxes for 1971 which the Grantee assumes and agrees to pay.

031316

STATE OF MAINE
REAL ESTATE TRANSFER TAX
AUG-2'72 Bureau of Taxation $16.50

To have and to hold the aforegranted and bargained premises. with all privileges and appurtenances thereof to the said

MAINE MEDICAL CENTER, its successors

~~Heirs~~ and Assigns, to its and their use and behoof forever.

And I do **covenant** with the said Grantee, its ~~Heirs~~ successors and Assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my Heirs, shall and will **Warrant and Defend** the same to the said Grantee, its successors

~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons, except as aforesaid

In Witness Whereof, I the said

AGNES E. TWEEDIE, being a widow

~~and~~ ~~[illegible]~~

~~joining in this deed as Grantor, and relinquishing and conveying rights by descent and all other rights in the above described premises,~~ have hereunto set my hand and seal this day of in the year of our Lord one thousand nine hundred and seventy-one.

Signed, Sealed and Delivered
in presence of

[signature] — Agnes E. Tweedie

State of Maine,
Cumberland } ss.

July 30 1971

Personally appeared the above named
AGNES E. TWEEDIE

and acknowledged the above instrument to be her free act and deed.

Before me,

[signature]
Justice of the Peace

My commission [illegible]

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE AUG 2, 1971
Received at 2 H 41 M P M, and recorded in
BOOK 3183 PAGE 576 [signature] Register

234 **Know all Men by these Presents, That** 16674 Book 3187 Page 234

I, MARGUERITE M. BROOKS of Portland, County of Cumberland and State of Maine

in consideration of one dollar and other valuable consideration

paid by MAINE MEDICAL CENTER, a corporation organized under the laws of the State of Maine with a place of business at Portland, County of Cumberland and State of Maine,

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said MAINE MEDICAL CENTER, its successors and assigns forever.

A certain lot or parcel of land with the buildings thereon, situated on the southeasterly side of Ellsworth Street, in the City of Portland, County of Cumberland and State of Maine, and at present numbered forty-four (44) on said street; said lot of land being bounded and described as follows:

Beginning at the northeasterly corner of Ellsworth Street and a lane running from said Ellsworth Street to the junction of Brackett and Arsenal Streets; thence northeasterly by said Ellsworth Street, twenty-six (26) feet, more or less, to land now or formerly of Neal P. Thompson; thence southeasterly by said Thompson land, seventy-four (74) feet, more or less, to land now or formerly owned by John Russell; thence southwesterly by said Russell land, forty (40) feet, more or less, to said lane; thence northwesterly by said lane, seventy-five (75) feet, more or less, to the point begun at.

Being the same premises conveyed to me by Walter E. Mangum et al by deed dated October 15, 1957 and recorded in Cumberland County Registry of Deeds in Book 2379, Page 181.

This conveyance is made subject to taxes for 1971 which the Grantee assumes and agrees to pay.

STATE OF MAINE
REAL ESTATE TRANSFER TAX
Bureau of Taxation 30.80

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said MAINE MEDICAL CENTER, its successors

~~heirs~~ and assigns, to their use and behoof forever. And I do covenant with the said Grantee, its successors ~~heirs~~ and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances except as aforesaid, that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs and assigns shall and will warrant and defend the same to the said Grantee, its successors ~~heirs~~ and assigns forever, against the lawful claims and demands of all persons, except as aforesaid.

In Witness Whereof, I, the said MARGUERITE M. BROOKS, being single,

~~joining in this deed as Grantor, and relinquishing and conveying rights by descent and all other rights in the above described premises~~, have hereunto set my hand and seal this 23rd day of August in the year of our Lord one thousand nine hundred and seventy-one.

Signed, Sealed and Delivered in presence of

Charles R. Cartwicker — Marguerite M. Brooks

State of Maine, Cumberland ss. August 23, 1971.

Personally appeared the above named MARGUERITE M. BROOKS

and acknowledged the foregoing instrument to be her free act and deed.

Before me, Charles R. Cartwicker ~~NOTARY PUBLIC~~ JUSTICE OF THE PEACE.

STATE OF MAINE, CUMBERLAND COUNTY, SS. *REGISTRY OF DEEDS*

Received AUG 23 1971 *at* 1 o'clock 40 *m.* 00 *M., and recorded in BOOK* 3187 *PAGE* 234 *Attest:* [signature] *Register.*

17480

Book 3188
Page 710

710

Know all Men by these Presents, That

PORTLAND WATER DISTRICT, a quasi-municipal corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine

in consideration of one dollar and other valuable considerations paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine and located at said Portland in said County and State

the receipt whereof it does hereby acknowledge, do es hereby remise, release, bargain, sell and convey, and forever quit-claim unto the said MAINE MEDICAL CENTER, its successors and assigns forever,

A certain lot or parcel of land situated in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at the intersection of the westerly side line of Vaughan Street with the southwesterly side line of Brackett Street; thence northwesterly by Brackett Street, two hundred forty-two and seventy-two hundredths (242.72) feet, more or less, to Bramhall Street; thence southwesterly by Bramhall Street, eighty-one and five hundredths (81.05) feet, more or less, to Chadwick Street; thence southerly by Chadwick Street, three hundred fifty-seven and forty-five hundredths (357.45) feet, more or less, to land of Chadwick Realty Corp.; thence by land of said Chadwick Realty Corp. and land of Maine General Hospital, two hundred eighty-eight and sixty-five hundredths (288.65) feet, more or less, to Vaughan Street; thence northerly by Vaughan Street, three hundred fifty-three and sixty-two hundredths (353.62) feet, more or less, to Brackett Street and the point of beginning. Containing 2.52 acres, more or less, and being known as the Bramhall Reservoir Lot.

A portion of the above-described premises, known as the J. & W. Warren Lot, was conveyed to the Portland Water Company by the following warranty deeds all dated May 1, 1869: deed of George Warren et al of a 1/3rd interest, recorded in Cumberland County Registry of Deeds, Book 368, Page 421; deed of John G. Warren of a 1/3rd interest, recorded in said Registry of Deeds, Book 368, Page 424; deed of Caroline Chadbourne et al of a 1/9th interest, recorded in said Registry of Deeds, Book 368, Page 423; and deed of Benjamin F. Chadbourne et al of a 2/9ths interest, recorded in said Registry of Deeds, Book 368, Page 425; and the remaining portion of said premises, known as the Payson Lot, was conveyed to said Portland Water Company by Henry M. Payson by warranty deed dated July 17, 1885, and recorded in said Registry of Deeds, Book 531, Page 32; all of said premises having been conveyed to said Portland Water District by Portland Water Company by quit-claim deed dated August 10, 1908, and recorded in said Registry of Deeds, Book 827, Page 147.

To Have and to Hold the same, together with all the privileges and appurtenances thereunto belonging, to the said

MAINE MEDICAL CENTER, its successors

~~their~~ and assigns forever. And it do es covenant with the said Grantee , its successors ~~heirs~~ and ~~heirs~~ assigns, that it will warrant and forever defend the premises to the said Grantee , its successors ~~heirs~~ and ~~heirs~~ assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

In Witness Whereof, the said PORTLAND WATER DISTRICT has caused this instrument to be sealed with its corporate seal and signed in its corporate name by William D. Monie , its Treasurer , thereunto duly authorized,

~~All of the dower and homestead and other rights and conveying rights by descent and all other rights in the above described premises have hereunto set~~ this first day of September in the year of our Lord one thousand nine hundred and seventy-one.

Signed, Sealed and Delivered in presence of

Robert B. Williamson

PORTLAND WATER DISTRICT

By William D. Monie
Its Treasurer

State of Maine, Cumberland ss. September 1, 1971.

Personally appeared the above named William D. Monie, Treasurer of said Grantor Corporation, as aforesaid

and acknowledged the foregoing instrument to be his free act and deed, in his said capacity, and the free act and deed of said corporation.

Before me, Robert B. Williamson
~~Notary Public~~ Justice of the Peace.

STATE OF MAINE, CUMBERLAND COUNTY, SS. REGISTRY OF DEEDS

Received SEP 1 1971 at 12 o'clock 06 m. P M., and recorded in BOOK 3188 PAGE 710 Attest: Margaret E. Kelley Register.

17050

Know All Men by These Presents,

209

That the CITY OF PORTLAND, a body politic and corporate,

[redacted]

[redacted] located at Portland

in the County of Cumberland and State of Maine

in consideration of Thirteen Thousand Five Hundred ($13,500.00) Dollars

paid by the MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine, whose address is 22 Bramhall Street, Portland, Maine

the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey and Forever Quit-Claim unto the said

Maine Medical Center, its successors

[redacted] and assigns forever,

a certain lot or parcel of land in the City of Portland, County of Cumberland and State of Maine, being bounded and described as follows:

Beginning at a point marking the intersection of the westerly terminus of the northerly side line of Bramhall Street and the Northerly terminus of the easterly side line of Western Promenade; thence on a course of South 61° 00' 30" West along a prolongation of the northerly side line of said Bramhall Street, a distance of eighty-six and eight hundredths (86.08) feet to a point; thence North 50° 49' 20" West, a distance of one hundred fifty-one and thirty-nine hundredths (151.39) feet to a point which point is on the southeasterly side line of Arsenal Street as it was formerly laid out; thence North 62° 24' 00" East fifty (50) feet to a point; thence North 27° 36' 00" West, a distance of forty (40) feet to a point on the northwesterly side line of Arsenal Street, as it was formerly laid out; thence North 62° 24' 00" East, a distance of two hundred seventy-two (272) feet, more or less, to a point which point is two hundred forty-eight (248) feet from the starting point hereof when measured on a course of North 16° 58' 00" East from said starting point; thence South 16° 58' 00" West, a distance of two hundred forty-eight (248) feet to said starting point.

Being a portion of the premises conveyed to the Grantor by deed of Sarah Little dated July 11, 1856, recorded in Cumberland County Registry of Deeds in Book 274, Page 6.

By acceptance of this deed, the Grantee covenants and agrees for itself, its successors and assigns:

(1) That the Grantee shall secure Planning Board review and approval of the site plan for its proposed development prior to beginning construction of any building and landscaping of the land herein conveyed.

(2) That the Grantee shall submit to the Planning Board for review and approval a grading plan within three months from the date hereof; that it will initiate actual grading work within six months from the date hereof; and that it will complete such grading work within three months from the date of completion of the proposed building.

(3) That the Grantee shall provide and forever maintain access for fire equipment satisfactory to the Fire Chief of the City of Portland to the proposed building and the remainder of the Medical Center Building Complex.

210

(4) That in the event of failure of the Grantee to complete or substantially complete the construction of the proposed building, landscaping, and grading in accordance with the approved site plan within three (3) years from the date hereof, the Grantee shall be required at the election of the Grantor, to reconvey to the Grantor all or such portion of the premises herein conveyed as the Grantor shall require for an amount which bears the same per square foot price as was paid for the premises herein conveyed.

(5) That if within a period of eight (8) years from the date hereof, the Grantee shall decide to sell any portion of the premises herein conveyed without selling all of its premises, it shall notify the Grantor in writing by registered mail directed to the City Manager of the City of Portland of its desire to sell such portion and thereupon the Grantor shall have the exclusive option for a period of sixty (60) days from the receipt of such notice to buy such portion for an amount which bears the same per square foot price as was paid for the premises herein conveyed.

(6) That the Grantee shall simultaneously with delivery of this deed to it, deliver to the Grantor at no cost to it a deed covering a parcel of land located at the intersection of the easterly side line of Gilman Street and the northwesterly side line of Arsenal Street for the purpose of providing a turn-around area serving Gilman Street.

(7) That the Grantee shall construct or cause to be constructed at no cost to the Grantor said turn-around area in accordance with specifications to be approved by the Director of Public Works of the City of Portland.

To have and to hold the same, together with all the privileges and appurtenances thereunto belonging, to it the said Maine Medical Center its successors and Assigns forever. And the said Grantor Corporation does covenant with the said Maine Medical Center, its successors and Assigns, that it will Warrant and Forever Defend the premises to it the said Grantee, its successors and Assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

In Witness Whereof, the said CITY OF PORTLAND has caused this instrument to be sealed with its corporate seal and signed in its corporate name by JOHN G. DePALMA, its Director of Finance thereunto duly authorized, this 4th day of August in the year one thousand nine hundred and seventy-two.

Signed, Sealed and Delivered in presence of

CITY OF PORTLAND

By John G. DePalma
Director of Finance

[CORPORATE SEAL]

State of Maine. CUMBERLAND ss. August 4 1972.

Personally appeared the above named JOHN G. DePALMA, Director of Finance of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporation.

Before me,

Notary Public

AUG 4 1972
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 3 H 05 M. and recorded in
BOOK 3278 PAGE 209 Register

23119

115

KNOW ALL MEN BY THESE PRESENTS that STATE OF MAINE, a body corporate and politic existing by law, in consideration of One Dollar ($1.00) and other valuable considerations paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine with its principal place of business in the City of Portland, County of Cumberland and State of Maine, the receipt whereof it does hereby acknowledge, does hereby RELEASE, GRANT and TRANSFER unto the said MAINE MEDICAL CENTER, its successors and assigns, all and any rights and interests in the former site of the State Arsenal situated on Bramhalls Hill, so-called, in the City of Portland, County of Cumberland and State of Maine, being all and the same premises described by Chapter 180 of the Resolves of the State of Maine, 1870, and Chapter 107 of the Resolves of the State of Maine, 1951, including any right of entry, reversion or other interest of the State of Maine in said premises reserved in the State of Maine by either of said Resolves and State of Maine does hereby waive as to said Maine Medical Center its successors and assigns any such rights which may now exist or which may in the future exist in State of Maine by virtue of said Resolves.

TO HAVE AND TO HOLD the aforegranted premises, with all privileges and appurtenances thereof to the said MAINE MEDICAL CENTER, its successors and assigns, and State of Maine does hereby covenant with said Maine Medical Center, its successors and assigns that State of Maine lawfully holds rights in said premises by virtue of said Resolves; that said rights are not encumbered; that it has good right to grant the same to Maine Medical Center as aforesaid; and that State of Maine, its successors and assigns, shall and will warrant and defend the same to Maine Medical Center, its successors and assigns forever against the lawful claims and demands of all persons; provided, nevertheless, that any and all liability of State of Maine for any damage or loss to Maine Medical Center, its successors and assigns, by virtue of any breach of the foregoing covenants and warranties shall be and hereby is limited forever to the total amount of One Dollar ($1.00).

IN WITNESS WHEREOF, Kenneth M. Curtis, Governor of the State of Maine, and Edmund C. Darey, Chairman of the Executive Council of the State of Maine, acting for and with the advice and consent of the said Executive Council given this date, have caused this instrument to be executed and sealed on behalf of the State of Maine this 6th day of September, 1972.

Witness:

Peter M. Dawborn

Thea L. Stewart

STATE OF MAINE

By Kenneth M. Curtis
Its Governor

By Edmund C. Darey
Its Chairman - Executive Council

STATE OF MAINE
KENNEBEC, ss.

September 6, 1972

Personally appeared the above-named Kenneth M. Curtis, Governor of the State of Maine, and Edmund C. Darey, Chairman of the Executive Council of the State of Maine and acknowledged the foregoing to be their free act and deed in said capacity and the free act and deed of said State of Maine.

Before me,

Peter M. Dawborn
~~Notary Public~~
Justice of the Peace

Approved as to form:
Lynn E. Hutchins
Assistant Attorney General

STATE OF MAINE

CUMBERLAND, ss. REGISTRY OF DEEDS

Received at 11 H 16 M A M on OCT 12 1972 and recorded in Book 3310 Page 115

Attest Loretta Murphy Register

116

23120

KNOW ALL MEN BY THESE PRESENTS, that CITY OF PORTLAND, a body corporate and politic existing by law, situated at Portland, County of Cumberland and State of Maine, in consideration of One Dollar ($1.00) and other valuable considerations paid by MAINE MEDICAL CENTER, a corporation organized and existing under the laws of the State of Maine with its principal place of business in the City of Portland, County of Cumberland and State of Maine, the receipt whereof it does hereby acknowledge, does hereby RELEASE, GRANT and TRANSFER unto the said MAINE MEDICAL CENTER, its successors and assigns, all its rights and interests in the land situated on Bramhall's Hill, so-called, in the City of Portland, County of Cumberland and State of Maine which land was conveyed by City of Portland to Maine General Hospital by deed dated June 4, 1870, which deed is duly recorded in the Cumberland County Registry of Deeds, Book 381, Pages 260, 261 and 262, to which deed reference is made for a particular description of said land, including any right of entry, possibility of reverter, reversionary or other interest of the City of Portland in said land reserved to said City in said deed and City of Portland does hereby waive as to said Maine Medical Center, its successors and assigns, said right of entry and any such other rights which may now exist or which may in the future exist in the City of Portland by virtue of said deed.

TO HAVE AND TO HOLD the aforegranted premises, with all privileges and appurtenances thereof to the said MAINE MEDICAL CENTER, its successors and assigns, and City of Portland does hereby covenant with said Maine Medical Center, its successors and assigns that City of Portland lawfully holds rights in said land by virtue of said deed of June 4, 1870; that said rights are not encumbered; that it has good right to grant the same to Maine Medical Center as aforesaid; that City of Portland, its successors and assigns, shall and will warrant and defend the same to Maine Medical Center, its successors and assigns forever against the lawful claims and demands of all persons; provided, nevertheless, that any and all liability of City of Portland for any damage or loss to Maine Medical Center, its successors and assigns, by virtue of any breach of the foregoing covenants and warranties shall be and hereby is limited forever to the total amount of One Dollar ($1.00).

IN WITNESS WHEREOF, City of Portland has caused this deed to be sealed and executed by John G. DePalma, its Director of Finance hereunto duly authorized, this 14th day of September, 1972.

Witness:

CITY OF PORTLAND

By _____
Its Director of Finance

STATE OF MAINE
CUMBERLAND, ss.

September 14, 1972

Personally appeared the above-named John G. DePalma, Director of Finance of said City of Portland and acknowledged the foregoing to be his free act and deed in said capacity and the free act and deed of said City of Portland.

Before me,

_____
Justice of the Peace — Notary Public

OCT 12 1972
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 11 H/7 M/4 M. and recorded in
BOOK 3310 PAGE 116 _____ Register

53

No. 108
6367

Know All Men by these Presents,

That We, LEROY E. APPLEBEE and ROBERTA M. APPLEBEE, both of Portland, in the County of Cumberland and State of Maine,

in consideration of One Dollar ($1) and other valuable considerations,

paid by MAINE MEDICAL CENTER, a Maine corporation with a place of business in Portland, in the County of Cumberland and State of Maine,

the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said MAINE MEDICAL CENTER, its successors and Assigns forever,

~~the following described property:~~

See attached Exhibit A.

54

To have and to hold the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said MAINE MEDICAL CENTER, its successors

~~Heirs~~ and Assigns, to it and their use and behoof forever.

And we do covenant with the said Grantee, its/ ~~Heirs~~ Successors and Assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our Heirs, shall and will Warrant and Defend the same to the said Grantee, its successors ~~Heirs~~ and Assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, We, the said LEROY E. APPLEBEE

and ROBERTA M. APPLEBEE, ~~wife~~ husband and wife,

joining in this deed as Grantors, and relinquishing and conveying our/ mutual rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this 7th day of April in the year of our Lord one thousand nine hundred and seventy-seven.

Signed, Sealed and Delivered in presence of

LEROY E. APPLEBEE

ROBERTA M. APPLEBEE

State of Maine,
Cumberland, } ss.

April 7 1977

Personally appeared the above named LEORY E. APPLEBEE and ROBERTA M. APPLEBEE and acknowledged the above instrument to be their free act and deed.

Before me,

Justice of the Peace

EXHIBIT A

A certain lot or parcel of land with the buildings thereon, situated on Bramhall Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a stone monument on the westerly corner of Brackett and Bramhall Streets; thence North 57° 20' West, 70.7 feet by the westerly sideline of Brackett Street; thence South 61° 07' West, 42.3 feet by the northerly sideline of a garage on the lot under description; thence South 27° 57' East, 62-1/2' feet to a point on the northerly sideline of Bramhall Street; thence North 61° 51' East, 77.5 feet by the northerly sideline of Bramhall Street to the stone monument aforesaid and point of beginning, together with the right to have the eaves of said garage which project over land of Ella C. Gardner remain as now constructed as long as said garage is maintained in its present position.

Being the same premises conveyed to Leroy E. Applebee and Roberta M. Applebee by Edna M. Sharp by deed dated September 27, 1972, and recorded in Cumberland County Registry of Deeds in Book 3303, Page 200.

APR 7 1977
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 10 H 22 M A.M., and recorded in
BOOK 3995 PAGE 53. Margaret L. Fisher Register

WARRANTY DEED

319

Know all Men by these Presents,

That JAMES H. SULLIVAN, Jr. of 26 Charles Street, Portland in the County of Cumberland and State of Maine

in consideration of One Dollar ($1.00) and other valuable considerations

paid by MAINE MEDICAL CENTER, a Maine corporation with a place of business in Portland, in the County of Cumberland and State of Maine whose mailing address is 22 Dramhall Street, Portland, Maine

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maine Medical Center, its successors

heirs and assigns forever,

A certain lot or parcel of land, with the buildings thereon, situated on the southwesterly side of Charles Street and the southeasterly side of Congress Street, in Portland, Maine, bounded and described as follows: Beginning at a point on the southwesterly side of said Charles Street at the northerly corner of land conveyed by Edward E. Proctor to Lulu M. Stickney by warranty deed dated May 16, 1890 and recorded in the Cumberland County Registry of Deeds in Book 567, Page 348; thence running southwesterly by said Stickney land a distance of seventy-five (75) feet, more or less, to land of the Maine General Hospital; thence running northwesterly by said Hospital land to the southeasterly side of Congress Street; thence running northeasterly by the southeasterly side of Congress Street seventy-five (75) feet, more or less, to land conveyed by Henry A. Sargent to Lucinda B. Proctor by warranty deed dated August 14, 1896, and recorded in said Registry of Deeds in Book 639, Page 284; thence running southeasterly by said Proctor land and by the southwesterly side line of said Charles Street to said Stickney land and the point of beginning.

Being the same premises conveyed to James H. Sullivan, Jr. by deed dated August 23, 1976 and recorded in said Registry of Deeds in Book 3936, Page 282.

320

To have and to hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maine Medical Center, its successors

~~heirs~~ and assigns, to it and ~~their~~ its use and behoof forever.

And I do covenant with the said Grantee, its/ ~~heirs~~ successors and assigns, that I am lawfully seized in fee of the premises, that they are free of all encumbrances

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will warrant and defend the same to the said Grantee, its/ ~~heirs~~ successors and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said James H. Sullivan, Jr. being unmarried

~~and~~

~~husband/wife of the said~~

~~joining in the deed of Grantee and~~ relinquishing and conveying all rights by descent and all other rights in the above described premises, have hereunto set my hand and seal this 25th day of the month of May, A.D. 19 83.

Signed, Sealed and Delivered in presence of

[signature] James H. Sullivan, Jr.

State of Maine, County of Cumberland **ss.** 25 May, 19 83.

Then personally appeared the above named James H. Sullivan, Jr.

and acknowledged the foregoing instrument to be his free act and deed.

Before me,

[signature]

My commission expires Sept. 20, 1986

Justice of the Peace
Notary Public
Attorney at Law

MAY 26 1983

REGISTRY OF DEEDS CUMBERLAND COUNTY, MAINE
Received at 12:01 P.M., and recorded in
BOOK 6177 PAGE 319

James J. Walsh Register

024397 BK0309PG0005

Book 8309
Page 6

QUITCLAIM DEED
With Covenant

Know all Men by these Presents,

That we, JOHN J. HAMMETT and ELIZABETH B. HAMMETT, both of Portland, County of Cumberland, Maine

in consideration of One Dollar ($1.00) and other valuable consideration

paid by MMC REALTY CORP., a Maine corporation with a place of business at 22 Bramhall Street, in the County of Cumberland, Maine

whose mailing address is 22 Bramhall Street, Portland, Maine 04102

the receipt whereof we do hereby acknowledge, do hereby remise, release, bargain, sell and convey, and forever quitclaim unto the said MMC Realty Corp., its

successors and assigns forever,

A certain lot or parcel of land, with the buildings thereon, situated on the northwesterly corner of Bramhall and Brackett Streets, in said Portland, and bounded and described as follows:

Beginning at the northwesterly corner of Brackett and Bramhall Streets; thence westerly on Brackett Street seventy-five (75) feet ten (10) inches, more or less, to land conveyed by William H. Chapman to Charles E. Graham by deed of April 29, 1920 and recorded in the Cumberland County Registry of Deeds in Book 1050, Page 213; thence northerly by land now or formerly of said Graham sixty-one (61) feet six (6) inches, more or less, to land conveyed by Alden J. Blethen to James K. Emery by deed dated April 30, 1880 and recorded in said Registry of Deeds in Book 467, Page 152; thence easterly by land now or formerly of said Emery sixty-six (66) feet six (6) inches to Bramhall Street; thence southerly by said Bramhall Street thirty (30) feet three (3) inches, more or less, to the point of beginning.

Being the same premises conveyed to the Grantors herein by Sumner J. Goffin by deed dated February 4, 1950 and recorded in said Registry of Deeds in Book 1985, Page 483.

MAINE REAL ESTATE TRANSFER TAX PAID

BK8309PG0006

To have and to hold the same, together with all the privileges and appurtenances thereunto belonging, to the said MMC Realty Corp., its successors

~~Heirs~~ and assigns forever.

And we do covenant with the said Grantee, its/ successors ~~Heirs~~ and assigns, that we shall and will warrant and defend the premises to the said Grantee, its/ successors ~~Heirs~~ and assigns forever, against the lawful claims and demands of all persons claiming by, through, or under us.

In Witness Whereof, we, the said John J. Hammott and Elizabeth B. Hammott

~~husband/wife of the said~~

~~[illegible]~~

~~[illegible]~~ have hereunto set our hands and seals this 31st day of the month of May, A.D. 19 88.

Signed, Sealed and Delivered
in presence of

[signature]
[signature]

[signature]
John J. Hammott
[signature]
Elizabeth B. Hammott, by John J. Hammott as her Attorney in Fact pursuant to Power of Attorney dated August 16, 1984 and recorded herewith in the Cumberland County Registry of Deeds

State of Maine, County of Cumberland ss. May 31, 1988.

Then personally appeared the above named John J. Hammott

and acknowledged the foregoing instrument to be his free act and deed.

Before me,

[signature]
Notary Public
Attorney at Law

Printed Name Lee D. Urban

RECEIVED
RECORDED REGISTRY OF DEEDS
1988 JUN -1 AM 8:31
CUMBERLAND COUNTY
James J. Walsh

BK8855PG0081

036413 WARRANTY DEED

MAINE REAL ESTATE TAX PAID

KNOW ALL MEN BY THESE PRESENTS, that GILMAN STREET LAND COMPANY, a Maine corporation, and GILMAN STREET ASSOCIATES, a Maine limited partnership, for consideration paid, grant to MMC REALTY CORP., a Maine Corporation with a principal place of business in Portland, County of Cumberland, State of Maine, whose mailing address is 22 Bramhall Street, Portland, Maine 04103, with WARRANTY COVENANTS a certain lot or parcel of land, with the improvements thereon, located at 52 Gilman Street, in the City of Portland, County of Cumberland, State of Maine, all as more particularly described in Schedule A attached hereto and incorporated herein.

IN WITNESS WHEREOF, the said GILMAN STREET LAND COMPANY has caused this instrument to be sealed with its corporate seal and signed in its corporate names by William H. Webster, its President, hereunto duly authorized, this 4th day of August, 1989, and the said GILMAN STREET ASSOCIATES has caused this instrument to be signed and sealed by William H. Webstar, President of its General Partner MORSE, PAYSON & NOYES PROPERTIES, hereunto duly authorized, this 4th day of August, 1989.

WITNESS:

Robert B. Patterson, Jr.

GILMAN STREET LAND COMPANY

By: W. H. Webster
William H. Webster
Its President

GILMAN STREET ASSOCIATES

By: MORSE, PAYSON & NOYES PROPERTIES,
Its General Partner

Robert B. Patterson, Jr.

By: W. H. Webster
William H. Webster
Its President

STATE OF MAINE
COUNTY OF CUMBERLAND, ss.

August 4, 1989

Then personally appeared before me the above named William H. Webster, President of Gilman Street Land Company, and President of Morse, Payson & Noyes Properties, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporations and partnership.

Before me,

Robert B. Patterson Jr.
~~Notary Public~~/Attorney at-Law

Robert B. Patterson, Jr.
Printed Name

~~My Commission Expires~~ _____

SCHEDULE A TO WARRANTY DEED

PARCEL ONE

A certain lot or parcel of land with the buildings thereon known as 52 Gilman Street, in Portland, County of Cumberland and State of Maine bounded and described as follows:

Beginning at a point on said street distant one hundred six and fifty-five one hundredths (106.55) feet northerly from the intersection of the westerly side of Gilman Street with the northerly side of A Street, and running thence northerly on said Gilman Street, thirty-seven and one half (37-1/2) feet to a point; thence westerly with an included angle of 91° 11' seventy and forty-two one hundredths (70.42) feet to a point; thence southerly and parallel to said Gilman Street, thirty-seven and one half (37-1/2) feet to land formerly of S. H. Jose, now of Gilman Street Land Company; thence easterly with an included angle of 91° 11' seventy and forty-two one hundredths (70.42) feet to the point of beginning.

PARCEL TWO

A certain lot or parcel of land with the buildings thereon, situated in said Portland, bounded and described as follows:

Beginning at a point in the Westerly side line of Gilman Street distant sixty-six (66) feet and one (1) inch South from the Southerly side line of Congress Street; thence running South by the side line of Gilman Street twenty-four (24) feet and eight (8) inches, more or less, to the Northerly line of land formerly of Winfield L. Smith, now of Gilman Street Land Company; thence by said line formerly of Smith and through the center of the partition wall between the house on said former Smith lot and the house on the lot herein described and by said line extended seventy and forty-two hundredths (70.42) feet and to land formerly of the City of Portland; thence North by said City of Portland land twenty-three (23) feet and eight (8) inches, more or less, to land conveyed by William B. Jordan to Willis B. Moulton et als, by deed dated May 14, 1897, and recorded in Cumberland County Registry of Deeds, Book 648, Page 450; thence in an easterly direction by said Moulton land seventy (70) feet and eight (8) inches to said Gilman Street and the point of beginning.

PARCEL THREE

A certain lot or parcel of land with the buildings thereon, situated on the westerly side of Gilman Street in said Portland and bounded as follows:

Beginning at a point on said westerly side of Gilman Street sixty-nine and five hundredths (69.05) feet northerly

from the northwesterly corner of Gilman and A Streets, and running thence northerly on Gilman Street thirty-seven and one-half (37-1/2) feet; thence westerly with an included angle of ninety-one degrees eleven minutes (91° 11') seventy and forty-two hundredths (70.42) feet to a stake; thence southerly with an included angle of eighty degrees forty-nine minutes (80° 49') thirty-seven and one half (37-1/2) feet; thence easterly with an included angle of ninety-one degrees eleven minutes (91° 11') seventy and forty-two hundredths (70.42) feet to the starting point. Being the southerly half of the lot conveyed to Samuel H. Jose by Charles F. Jose by deed dated December 6, 1886, and recorded in Cumberland County Registry of Deeds in Book 530, Page 255, to which reference is made. The premises herein conveyed are designated as No. 50 on said Gilman Street.

PARCEL FOUR

A certain lot or parcel of land with the buildings thereon situated on the westerly side of Gilman Street in Portland, County of Cumberland and State of Maine, the house being the southerly house in a block of two houses built on this and the adjoining lot, bounded and described as follows:

Beginning on the westerly sideline of Gilman Street ninety and seventy-eight hundredths (90.78) feet from the southerly line of Congress Street; thence southerly on line of Gilman Street fifty (50) feet to land formerly of Charles F. Jose, now of Gilman Street Land Company; thence westerly by said land formerly of Jose, seventy and forty-two hundredths (70.42) feet to land formerly of City of Portland; thence northerly by said City of Portland land fifty (50) feet; thence easterly seventy and forty-two hundredths (70.42) feet passing through the center of the division wall between said two houses to the point of beginning; containing 2520 square feet.

Meaning and intending to convey and hereby conveying the same premises which were conveyed to Gilman Street Land Company by John A. Godsoe, John E. Knowles, John T. Libby, Marvin C. Adams, Thomas A. Martin, Jr., and Vincent N. Oliviero, Trustees, by Trustees Deed dated December 28, 1984 and recorded in the Cumberland County Registry of Deeds in Book 6653, Page 290.

Subject to partition wall rights and obligations as set forth in deed from Virginia R. Buckley to Helen M. Sawyer dated May 4, 1948 and recorded in Cumberland County Registry of Deeds in Book 1912, Page 424 and in deed from Judith P. Johnson to Edgar J. Murphy and Louise M. Murphy dated August 31, 1948 and recorded in Cumberland County Registry of Deeds in Book 1926, Page 311.

RECEIVED
RECORDED REGISTRY OF DEEDS
1989 AUG -4 PM 4:02
CUMBERLAND COUNTY

056000

MAINE REAL ESTATE TAX PAID

KNOW ALL MEN BY THESE PRESENTS, That CASCO AERIE, NO. 565, FRATERNAL ORDER OF EAGLES, a/k/a CASCO AERIE FRATERNAL ORDER OF EAGLES #565, a/k/a FRATERNAL ORDER OF EAGLES CASCO AERIE NO. 565, a Maine corporation with a mailing address of 265 Valley Street, Portland, Maine 04112, and having a place of business at Portland, in the County of Cumberland and State of Maine, in consideration of $1.00 and other valuable consideration paid by MMC REALTY CORP., a Maine corporation, whose mailing address is 22 Bramhall Street, Portland, Maine 04102, the receipt whereof it does hereby acknowledge, does hereby give, grant, bargain, sell and convey unto the said MMC REALTY CORP., its successors and assigns forever, certain lots or parcels of land in the City of Portland, County of Cumberland, State of Maine, with any buildings thereon, bounded and described as follows:

261-269 Valley Street

A certain lot or parcel of land with the buildings thereon, situated in Portland and described as follows:

Beginning at a point on the North side of A Street, Portland, Maine, said point being the intersection of said North side line of A Street with the East side line of B Street, the name of which was changed to Valley Street in 1939; thence Northerly and making an included angle of Eighty-two (82) degrees Fifty-nine (59) minutes with the East direction of said North side line of A Street a distance of Two hundred eighty-five (285) feet, more or less, to a point in the South side line of Congress Street, said point being thirty-five (35) feet East along said South side line of Congress Street from its intersection with the East side line of Valley Street as now laid out and accepted; thence East along said South line of Congress Street and making an included angle of Ninety-four (94) degrees 49', a distance of forty-five (45) feet, more or less, to a point in the division line between the lot of land of the Grantor under description and land now or formerly of one Charles F. Jones; thence South along the said division line between land of the Grantor and land now or formerly of Charles F. Jones and land now or formerly of Charles C. Plummer, Ellsworth W. Stuart, Charles F. Jose, Maris M. and Charles F. Jose, Trustees, and Charles F. Jose a distance of 281.17 feet, more or less, to a point in the North side line of A Street; thence West and making an included angle of 89 degrees 57' and along the North side line of A Street a distance of Eighty (80) feet more or less to the point of beginning, containing 17,570 square feet, more or less.

Excepting therefrom a portion bounded and described as follows, to wit:

Beginning at a point on the East side line of said Valley Street One Hundred Fifty (150) feet South from the intersection of said East side line of Valley Street with the South side line of Congress Street, thence North by said East line of Valley Street One Hundred Fifty (150) feet to the South side line of Congress Street; thence East along said South side line of Congress Street making an included angle of 94 degrees 49', a distance of Forty-five (45) feet more or less, to a point in the division line between the lot of land under description and land now or formerly of one Charles F. Jones; thence South along the said division line between the land under description and the land of said Charles F. Jones and others One Hundred Fifty (150) feet, to a point; thence West 63.48 feet, to the point of beginning.

42 - 46 Gilman Street

A certain lot or parcel of land with the buildings thereon situated on the northwesterly corner of Gilman and A Streets in the City of Portland, County of Cumberland, State of Maine, and bounded and described as follows:

Beginning at the intersection of the westerly side of said Gilman Street with the northerly side of said A Street, and running thence northerly on said Gilman Street, sixty-nine and five one-hundredths (69.05) feet to land formerly of S.H. Jose; thence westerly by said S. H. Jose land, seventy and forty-two one-hundredths (70.42) feet to a stake; thence southerly and parallel with said Gilman Street seventy and forty-seven one-hundredths (70.47) feet to A Street; thence easterly by said A Street, seventy and forty-one one-hundredths (70.41) feet to the place of beginning.

268 - 270 Valley Street

A certain lot or parcel of land with the buildings thereon situated on the westerly side of Valley Street, formerly called B Street, in said Portland, bounded and described as follows:

Beginning at a point on said westerly side line of Valley Street at a point distance one hundred thirty six (136) feet northerly from the intersection of the westerly side of Valley Street and the northerly side of A Street; thence running southerly by said westerly side of Valley Street seventy-one (71) feet to a point; thence running westerly sixty (60) feet to land now or formerly of George W. Billings and Catherine A. Reed, at a point which is distant sixty-five (65) feet northerly from the northerly side line of A Street; thence running northerly by said Billings and Reed land sixty-four and seventy-six hundredths (64.76) feet to land formerly of William G. Davis and continuing northerly by said Davis land six and forty-three hundredths (6.43) feet; thence easterly approximately fifty-seven (57) feet to the point of beginning.

Being the same premises conveyed to the within grantors by the following deeds: Deed from Mid-Central Fish Company of Maine dated January 15, 1963 and recorded in Cumberland County Registry of Deeds in Book 2727, Page 347; Deed from Sebastiano Pennisi, et al dated June 25, 1963 and recorded in Cumberland County Registry of Deeds in Book 2759, Page 254; and Deed from Eugene S. Martin dated March 28, 1980 and recorded in Cumberland County Registry of Deeds in Book 4582, Page 291.

Subject to the following:

1. Taking of Valley Street as referenced in the deed from the City of Portland to the Unity Company dated October 20, 1937 and recorded in Cumberland County Registry of Deeds in Book 1527, Page 318 (261-269 Valley Street).

To have and to hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said MMC REALTY CORP., its successors and assigns, to them and their use and behoof forever.

AND the said Grantor Corporation does hereby covenant with the said Grantee, its sucessors and assigns, that it is lawfully seized in fee of the premises, that they are free of all encumbrances except as aforesaid, that it has good right to sell and convey the same to the said Grantee to hold as aforesaid; and that it and its successors, shall and will warrant and defend the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, the said CASCO AERIE, NO. 565, FRATERNAL ORDER OF EAGLES has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Robert James, Richard Brichetto, Hilbert Welch, Reginald Conohan and Fred Darling.

its Trustees thereunto duly authorized, this 21ST day of November, A.D. 1990.

CASCO AERIE, NO. 565,
FRATERNAL ORDER OF EAGLES

Witness

By: Robert James
Robert James
Its Trustee

Witness

By: Richard Brichetto
Richard Brichetto
Its Trustee

Witness

By: Hilbert Welch
Hilbert Welch
Its Trustee

Witness

By: Reginald Conohan
Reginald Conohan
Its Trustee

Witness

By: Fred Darling
Fred Darling
Its Trustee

STATE OF MAINE
COUNTY OF CUMBERLAND

November 21, 1990

Then personally appeared the above named Robert James, Richard Brichetto, ~~Hilbert Welch,~~ Reginald Conohan and ~~Fred Darling,~~ Trustees of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be their free act and deed in their said capacity, and the free act and deed of said Corporation.

Before me,

Attorney at Law
Notary Public
SHERRIE LYNN FONTAINE
NOTARY PUBLIC, MAINE
MY COMMISSION EXPIRES NOVEMBER 19 1996

Printed Name

SEAL

RECEIVED
90 NOV 21 PM 3:54
CUMBERLAND COUNTY

47527

DEED OF SALE BY PERSONAL REPRESENTATIVE
(Testate)
Maine Statutory Short Form

47527 B 9722 P 45

Book 9722
Page 45

Know all Men by these Presents,

That Thomas F. Kane, Jr.

of Scarborough, County of Cumberland, State of Maine,

duly appointed and acting personal representative of the estate of Edna Faye Kane,

deceased (testate), as shown by the probate records of the County of Cumberland, Maine,

(and having given notice to each person succeeding to an interest in the real property described below at least ten (10) days prior to the sale) ~~(and not having given notice to each person succeeding to an interest in the real property described below at least ten (10) days prior to the sale, such notice not being required under the terms of the decedent's will)~~, by the power conferred by the Probate Code, and every other power, for consideration paid, grants to Maine Medical Center* of Portland,

*a nonprofit corporation organized and existing under the laws of the State of Maine

County of Cumberland, State of Maine,

whose mailing address is 22 Bramhall Street, Portland, ME 04102,

the real property in Portland, County of Cumberland,

State of Maine, described as follows:

A certain lot or parcel of land with the buildings thereon, situated in said Portland on the southeasterly side of Ellsworth Street, bounded and described as follows: -viz;-Beginning on the said southeasterly side of Ellsworth Street at land now or formerly of S.F. Haggett; thence southeasterly by said Haggett's land seventy-five (75) feet, more or less, to land now or formerly of J.T. Walton; thence southwesterly by said Walton's land and land now or formerly of N. Waterhouse eighty (80) feet, more or less, to land now or formerly of N.P. Thompson; thence northwesterly by said Thompson's land seventy-five (75) feet, more or less, to said Ellsworth Street; thence northeasterly by said Ellsworth Street to point begun at. Containing five thousand eight hundred forty (5,840) square feet, more or less. Said lot is numbered 34-36 and 38 as shown upon valuation plan of the City of Portland.

Being the same premises conveyed to Edna F. Kane by May Porter by her Warranty Deed, dated April 3, 1940 and recorded in Cumberland County Registry of Deeds in Book 1603, Page 134.

MAINE REAL ESTATE TAX PAID

Instr 47527 Bk 9722 Pg 46

Witness my hand and seal this 20th day of September, 19 91.

Signed, Sealed and Delivered in presence of

Samuel J. Shatz

Personal Representative of the Estate of Edna Faye Kane

Thomas F. Kane, Jr.

Samuel J. Shatz

Thomas F. Kane, Jr.

State of Maine, County of Cumberland ss. September 20, 19 91.

Then personally appeared the above named Thomas F. Kane, Jr.

in his said capacity and acknowledged the foregoing instrument to be his free act and deed.

Before me,

Samuel J. Shatz

Notary Public
Attorney at Law

Recorded
Cumberland County
Registry of Deeds
09/20/91 03:59:12PM
Robert P. Titcomb
Register

54881

WARRANTY DEED
(Maine Statutory Short Form)

KNOW ALL BY THESE PRESENTS, that I, William H. Leschey, Jr., whose mailing address is 930 Congress Street, Portland, ME 04102, for consideration paid, GRANT to MMC Realty Corp., a Maine corporation with an established place of business at and mailing address of 22 Bramhall Street, Portland, Maine 04102, with WARRANTY covenants, the land in Portland, County of Cumberland, State of Maine, which is more particularly described as follows:

A certain lot or parcel of land, with any buildings or improvements that may be thereon, situated on the southerly side of Congress Street, bounded and described as follows: BEGINNING on the southerly sideline of Congress Street at its intersection with the westerly sideline of Gilman Street; thence southerly by the westerly sideline of Gilman Street, sixty-six feet, one inch (66' 1") to the northeasterly corner of land now or formerly of Helen M. Sawyer; thence westerly by said Sawyer land seventy feet, eight inches (70' 8") to the easterly sideline of land now or formerly of Schwartz Bros. Inc.; thence northerly by said Schwartz Bros. Inc. land, sixty-two feet, one inch (62' 1") to the southerly sideline of Congress Street; thence easterly by the southerly sideline of Congress Street, seventy feet, eight inches (70' 8") to the point of beginning.

Being the same premises conveyed to the Grantor herein by deed of Edythe D. Field, dated May 11, 1987, and recorded in the Cumberland County Registry of Deeds in Book 7784, Page 182.

MAINE REAL ESTATE TAX PAID

WITNESS my hand and seal this 1st day of September, 1994.

SIGNED, SEALED AND DELIVERED
in the presence of:

William H. Leschey, Jr.

STATE OF MAINE
COUNTY OF CUMBERLAND, ss September 1, 1994

Then personally appeared the above-named William H. Leschey, Jr. and acknowledged the foregoing instrument to be his free act and deed.

Before me,

Notary Public/Attorney at Law
Printed Name: CHRISTOPHER J.W. CROSSHALL

RECEIVED
RECORDED REGISTRY OF DEEDS
94 SEP -1 PM 3:05
CUMBERLAND COUNTY
John B O'Brien

BKL/4078/AAO/DR

Section 3: Financial Capacity

A. Estimated Costs

An estimate of probable overall construction cost associated with the new MMC Congress Street Building is ±$210,000,000.00.

The following is the estimate for a selection of applicable SLODA site work:

1.	Earthwork / Soils/ ESC	$ 608,150.00
2.	Site Utilities (Water, Sewer, Storm)	$ 861,825.00
3.	Pavement/Site Walls	$ 1,140,963.00
4.	Landscape and Irrigation	$ 549,671.00
	Total	$ 3,161,609.00

B. Financing

The applicant for the development of this project is the record owner, Maine Medical Center. See enclosure, this section for demonstration of financial capacity.

C. Certificate of Good Standing

The State of Maine Department of Secretary of State indicates that Maine Medical Center is in good standing, see attached corporate name information summary.

MAINE MEDICAL CENTER LEVEL III SITE PLAN APPLICATION

CONGRESS ST PATIENT TOWER

EVIDENCE OF FINANCIAL & TECHINICAL CAPACITY

The health care landscape has been in a state of change, particularly since the signing of the Affordable Care Act (ACA). Given the recent changes in the executive and legislative branches of the federal government and continued references to "repealing" the ACA, it is nearly impossible to anticipate the scope of future changes. Maine Medical Center's strategic financial plan assumes continued market basket increases at or near 3% annually. Additionally, the strategic financial plan assumes the following:

- Little or no increase in Medicare or Medicaid payments
- Stable payer mix
- No expansion to the Medicaid program
- Achievement of operational efficiencies based on analyses of national benchmark data
- Stable utilization of hospital services
- Continuation of provider-based billing at existing locations
- Stable levels of bad debt and charity care

Minor changes in the law or regulatory environment impacting these assumptions will likely not jeopardize the overall strategic financial plan. Substantive changes, however, will need to be monitored closely to ensure support of the project.

MMC is fully licensed and accredited, and has been providing services of this scale and scope for years.

Through multiple building projects throughout the history of the organization, MMC has demonstrated its ability to develop new and renovated facilities that meet all licensure and accreditation requirements.

The proposed project's program, and design, developed by a team of health care architects and engineers, and hospital physicians and staff, are in conformance with Guidelines for Design and Construction of Health Care Facilities, 2006 Edition, Facilities Guidelines Institute, (American Institute of Architects, Washington, DC, 2006) as required by the State of Maine Department of Health and Human Services' Division of Licensing and Regulatory Services. In addition, the guidelines for Design and Construction of Health Care Facilities, 2014 Edition, Facilities Guidelines Institute, (American Institute of Architects, Washington, DC, 2014) were also used in the proposed project's design.

Interactive Corporate Services

MAINE

Department of the Secretary of State

Bureau of Corporations, Elections and Commissions

Corporate Name Search

Information Summary

Subscriber activity report

This record contains information from the CEC database and is accurate as of: Wed Oct 24 2018 14:03:50. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
MAINE MEDICAL CENTER	19510013ND	NONPROFIT CORPORATION (T13-B)	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
03/21/1951	N/A	MAINE

Other Names	(A=Assumed ; F=Former)
MAINEHEALTH CARE	A
THE BARBARA BUSH CHILDREN'S HOSPITAL	A
THE BARBARA BUSH CHILDREN'S HOSPITAL AT MAINE MEDICAL CENTER	A
NORTHERN NEW ENGLAND POISON CENTER - CANCELLED	A
CASCO BAY FAMILY PHYSICIANS	A
CLINICAL TRIAL CENTER	A

Clerk/Registered Agent

LUGENE INZANA
22 BRAMHALL STREET
PORTLAND, ME 04102

Section 4

Technical Ability

Section 4: Technical Ability

A. Prior experience / B. Personnel

The applicant has successfully developed and managed Maine Medical Center through an extensive series of expansions and improvements. Notably, in 2015 MMC completed construction of a new surgical center that included a new two-story operating wing encompassing 41,000 square feet with five new operating rooms and 20 pre and post-surgery recovery bays. The aforementioned surgery building and the proposed new Congress Street building was designed by the Boston-based studio of global architecture firm Perkins + Will. MMC has retained the services of Sebago Technics, Inc. for civil, landscape architecture and site permitting services.

Sebago Technics, Inc. (STI) is a multi-disciplinary engineering firm that offers a wide range of services specializing in land development, planning, permitting, and engineering design services. We maintain a staff of multi-disciplinary professionals to provide services in the areas of general civil engineering, road and utility infrastructure design, construction management, permitting, landscape architecture, soil science, wetlands science, geotechnical services, land surveying, and environmental engineering. Over the years, we have found our depth of services to be a key element in meeting the customer's needs with timely and responsive services.

Please see this Section for resumes of key personnel.

Introduction to Sebago Technics, Inc.



Year Established: 1981 (36 years in business)

About Us: Sebago Technics, Inc. (STI) is a consulting firm of more than 65 design professionals and technical staff providing services throughout New England. From the start, our business plan was simple: "to provide quality, cost-effective civil engineering services that are responsive to a customer's goals, schedule and budget." Our One Company capabilities and resources provide clients with experience and solutions to respond to their planning, permitting and design needs.



Structure: Employee-owned since 1998

Services: Civil, environmental, transportation & traffic engineering; municipal engineering; local/state/federal permitting and planning; land surveying & laser scanning; GIS; landscape architecture; environmental services; and natural resources.

Employee Disciplines:
Professional Engineers, Civil Engineers, Transportation Engineers, Landscape Architects, Professional Land Surveyors, Survey Technicians, CADD Designers, Wetland Scientist, Soil Scientist, Construction Inspectors, Environmental Scientists, GIS Professionals, Marketing, Administrative & Financial



Professional Focus: Sebago Technics provides engineering and planning services to both public and private sector clients. In the municipal and government sectors we have provided multiple discipline services through General Services Contracts (GSC) and project specific contracts. A few examples include the Portland Jetport, City of Portland Public Services, City of South Portland, City of Lewiston, City of Westbrook and several smaller communities. Our municipal sector work includes street and utility infrastructure design, municipal facility planning and specialty work such as Island marine and solid waste planning & engineering.

Location: South Portland, ME

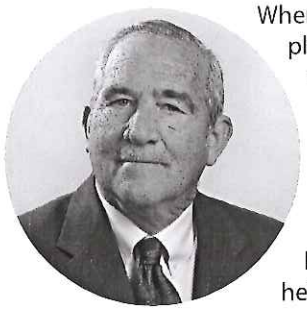


Geographic Service Area: Maine, New Hampshire, Vermont, Massachusetts

Web Site: www.sebagotechnics.com

WILLIAM T. CONWAY, RLA, LEED-AP

Senior Vice President, Landscape Architecture



When Mr. Conway joined Sebago Technics, Inc. in 1988, he established new disciplines of master planning, land planning, and landscape architecture. His extensive experience with multi-disciplinary professional teams and sound project management for government agencies, corporate clients, and private developers resulted in substantial growth in this field. The company is now recognized as one of the leading firms in the State of Maine for Landscape Architectural services.

Mr. Conway has had significant exposure and experience in professional practice resulting from his work throughout several regions of the United States, as well as Europe and the Middle East. He has also held key positions with design firms in Atlanta, Georgia and Tucson, Arizona prior to moving to Maine. He has held professional registrations in the states of Arizona, Georgia, Connecticut, Maine, and Hew Hampshire.

Much of his work involves large-scale projects, including the L.L. Bean Freeport Retail Store and Desert Road Campus, several projects for the American Skiing Company, the UNUM Provident Headquarters in Portland (HO-III), master planning and site design for Maine Medical Center in Portland and Scarborough, Maine, and a site selection study for IDEXX Laboratories in the Greater Portland area.

EXPERIENCE

Portsmouth Public Library, Portsmouth, New Hampshire - Will worked closely with City officials in the planning and design of this building, a recipient of LEED Silver Certification. Located in the vicinity of Strawberry Banke, the site design features an outdoor reading courtyard, in part enclosed by the remains of an historic armory which once stood on the library site.

Stroudwater Landing, Westbrook, Maine - Master planning services for a 65 acre elderly housing campus planned for comprehensive housing alternatives including independent and assisted living opportunities. Avita of Westbrook, a 70 bed assisted living facility specializing in memory care services, features extensively landscaped, secure exterior courtyards. Stroudwater Landing Lodge is a 95 unit independent and assisted living community, offering residents a variety of outdoor recreational amenities. The future build out of the campus is planned to accommodate 44 independent living cottage units and medical offices.

Avita of Brunswick, Brunswick, Maine – Site planning and landscape architectural services for a 70 bed assisted living facility, located within Brunswick Landing, a former naval air station. This project includes a graceful arrival to this one story building, comprised of three resident "neighborhoods" which share common core services and administrative offices. Each neighborhood has easy access to a secure exterior courtyard. The courtyards are lush garden areas with ample seating and activities including gardening and group activities.

Southern Maine Area on Aging Day Services, Biddeford, Maine – Site planning and landscape architecture for a day services facility serving the elderly population in southern York County. Working closely with the Southern Maine Area on Aging staff, this site was designed to facilitate daily drop off and pick up activities inherent with the facility program. The 10,000 square foot, single story building is complimented with a secure exterior courtyard with extensive landscape plantings, raised benches for gardening activities, walking paths and seating facilities.

Maine Veteran's Cemetery, Augusta, Maine – Site planning and landscape architectural services for a major expansion to the cemetery located in Augusta, Maine. The project is located in the heart of the cemetery grounds, and was designed with geometry derived from Arlington National Cemetery in Washington, D.C. Design review was coordinated with and approved by the Maine Bureau of General Services, the Maine Veterans Cemetery System, and the U.S. Department of Veterans Affairs.

EDUCATION

University of Tucson, Tucson, AZ
Bachelor of Science
Landscape Architecture, 1979

REGISTRATIONS

Registered Landscape Architect:
Maine #20000108

LEED Accredited Professional
CLARB Certified

MEMBERSHIPS

American Society of Landscape Architects

Council of Landscape Architectural Registration Boards

PUBLICATIONS

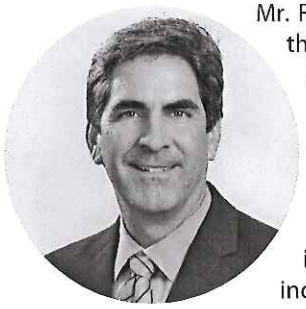
Doris Allen Twitchell Village Student Housing/ University of Maine, Orono, Maine; article in Contemporary Trends in Landscape Architecture, Van Nostrand Reinhold, 1997

SEBAGO TECHNICS

207.200.2055 WCONWAY@SEBAGOTECHNICS.COM

DANIEL L. RILEY, PE, CFM

Vice President, Engineering



Mr. Riley is a Senior Project Manager and Vice President of Engineering with over 20 years of experience in the civil engineering field on projects for the private sector, as well as federal and municipal clients. He has a diverse background in civil engineering, site design, residential and commercial development and permitting.

He is experienced and well versed in presenting complex, controversial and publicly sensitive issues to a variety of audiences. Since 2008, Mr. Riley has been the Contract Manager and lead engineer for Sebago Technics' General Engineering Services Contract with the City of South Portland. In that role, he is responsible for coordinating the firm's services and providing engineering support for City Departments including Planning and Development, Bus/Transportation and Waterfront, Public Works, and Parks and Recreation.

Prior to joining Sebago Technics, Mr. Riley worked as a professional engineer in Colorado specializing in water resources engineering. In that role, he managed projects for federal and municipal clients, including stormwater master planning studies and floodplain analysis and delineation projects. He has also assisted communities with the implementation of Stormwater Management Utilities.

EXPERIENCE

Maine Medical Center Bramhall Campus Expansion
Site and utility design for a comprehensive facilities construction project on the hospital's downtown Portland campus. The scope of the project includes a 4-story birthing center, 512 car parking garage, central utility plant and helicopter pad. The project includes the vacation and realignment of two public streets and the development of a steep, challenging site.

Central Maine Medical Center Emergency Department Expansion
Site and utility design for a 46,500 sf expansion of the hospital's emergency department providing 52,000 annual emergency room patient visits. Site improvements included the reconfiguration of patient parking areas, ambulance access from Main Street, pedestrian improvements lighting and landscaping. New traffic calming measures were constructed along Main Street in Lewiston to better define ambulance access and enhance the safety of pedestrian crossings.

Jordan's Meats Redevelopment - Portland, ME
Mr. Riley managed the site design and permitting of the Westin Hotel and Residences, a 480,000 square feet mixed use development. The site is located on a full city block adjacent to Portland's developing waterfront. The project approvals, including major utility relocations and City Council approval of a contract zone to allow 30 feet of additional building height, were approved in less than 8 months.

After securing entitlements the property was sold. Mr. Riley was the engineer of record for the current owner, responsible for the site design and utility construction for first phase development of the Hampton Inn that occupies the site today.

City of South Portland Maine Engineering Services
Mr. Riley has been the Contract Manager and lead engineer for Sebago Technics' General Engineering Services Contract with the City of South Portland. In that role, he is responsible for coordinating the firm's services and providing engineering support for City Departments including Planning and Development, Bus/Transportation and Waterfront, Public Works, and Parks and Recreation.

EDUCATION

Villanova University, Villanova, PA
Bachelor of Science, Civil Engineering
1991

REGISTRATIONS

Professional Engineer:
Maine #9967
Colorado: #32176

Certified Floodplain Manager
#32249

MEMBERSHIPS

Chi Epsilon, National Civil Engineering Honor Society

American Society of Civil Engineers

SEBAGO TECHNICS

207.200.2080 DRILEY@SEBAGOTECHNICS.COM

Section 5

Noise

05: Noise

A. Developments producing a minor noise impact

Per item (3) Schools and hospitals, the new patient care building is redevelopment at an existing hospital and is considered to be a development producing minor noise impact.

B. Developments potentially producing a major noise impact.
Not applicable.

Section 6

Visual Quality and Scenic Character

06: Visual Quality and Scenic Character

The proposed new property services facility will not negatively impact the visual quality of the surrounding landscape, nor will it significantly affect the scenic character of the Congress Street, Portland location. The project is located within a dense urban setting consisting of hospital, office buildings, parking and multi-family residential housing. The proposed site improvements have been designed to be consistent with the MMC campus and to complement surrounding properties. This project includes the removal of the Gilman Street staff parking garage for the building expansion into the space and reorienting the campus toward Congress Street. The proposed site improvements are part of a revitalization to one of the City gateways. We have included an existing conditions photo of MMC taken from I-295 and a photo simulation of the completed project.

The development does not impact areas of significant scenic character, therefore a Visual Impact Analysis has not been prepared. The site meets the standard for no unreasonable impact on scenic resources, and the proposed site activity will not be visible from scenic resources as defined by Chapter 315 of the relevant Maine DEP regulations.

Existing Northeasterly View to MMC from Interstate-295

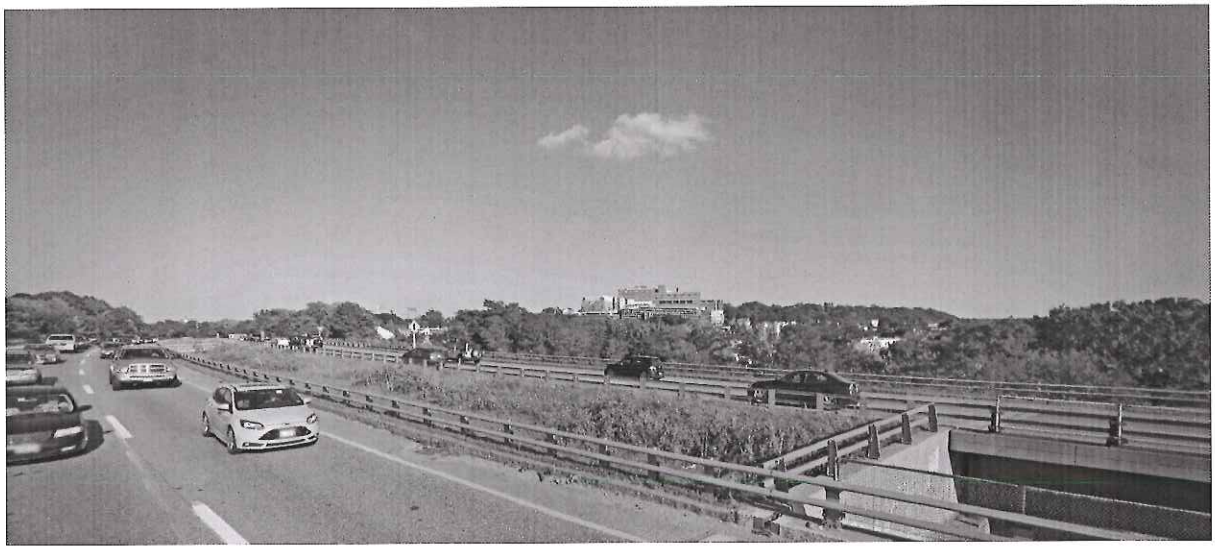
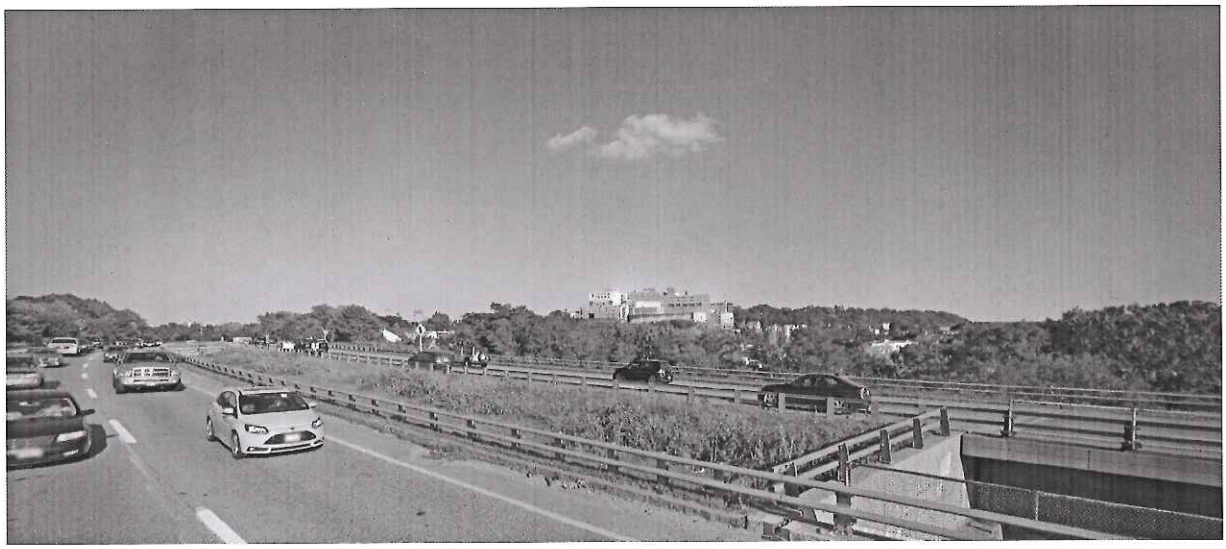


Photo Simulation of Completed Project



Section 7

Wildlife & Fisheries

Section 7: Wildlife & Fisheries

Sebago Technics has recently solicited an updated site review by the Maine Department of Inland Fisheries and Wildlife (MDIFW) for the presence of essential habitats that will be affected by the project. Significant impacts are not anticipated as the site is mostly developed and occurs in a dense urban setting. Enclosed in this section is a copy of the letter sent to MDIFW all future correspondence and the determination letter will be forwarded to the City upon receipt.

SEBAGO
TECHNICS

October 24, 2018
15466

Mr. John Perry
Environmental Coordinator
Maine Department of Inland Fisheries
41 State House Station
Augusta, Maine 04333
John.Perry@Maine.gov

Re: Maine Medical Center
New Congress Street Patient Care Building
22 Bramhall Street, Portland

Dear John:

Sebago Technics is in the process of updating resource letters as part of the required permit applications for proposed site improvements associated with the redevelopment of a portion of the Maine Medical Center Campus. This project includes the demolition and removal of the existing employee garage on the Bramhall Campus. In its place, MMC will build a new six-story medical building. The proposed new building will provide patient and procedure rooms and will include a new arrival/departure plaza and main entrance to the hospital on Congress Street.

We respectfully request that you review your resources for any lands that support rare, threatened and endangered species, designated essential and significant wildlife habitats, and fisheries habitat. For your reference, I have attached a site location map for your reference and record. If you have any questions on this project, please do not hesitate to contact me at snichols@sebagotechnics.com or on my direct line at (207) 200-2120. I look forward to hearing from you.

Sincerely,

SEBAGO TECHNICS, INC.

Stefanie Nichols

Stefanie Nichols
Permitting Specialist/Project Coordinator

enc.

Section 8

Historic Sites

Section 8: Historic Sites

Sebago Technics recently solicited an updated review from the Maine Historic Preservation Commission (MHPC) for the presence of archaeological features or historic properties of concern within the vicinity of the site redevelopment project. Historic impacts are not anticipated as part of the project as the project includes removal of an existing parking structure and replacement with a new patient care building and other associated site improvements. A copy of the letter to MHPC is included in this section and future correspondence and the determination letter will be forwarded to the City upon receipt.

SEBAGO
TECHNICS

October 24, 2018
15466

Mr. Kirk Mohney
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04039-0065

Re: Maine Medical Center
New Congress Street Patient Care Building
22 Bramhall Street, Portland

Dear Mr. Mohney

Sebago Technics is in the process of updating resource letters as part of the required permit applications for proposed site improvements associated with the redevelopment of a portion of the Maine Medical Center Campus. This project includes the demolition and removal of the existing employee garage on the Bramhall Campus. In its place, MMC will build a new six-story medical building. The new building will provide new patient and procedure rooms and will include a new arrival/departure plaza and main entrance to the hospital on Congress Street.

Sebago Technics intends to file an amended Site Location of Development Act application for delegated review by the City. We have reviewed City resources and determined that the Bramhall MMC Campus is not located within a designated Historic District. We respectfully request a review by the Maine Historic Preservation Commission for any Archaeological or Historic Sites within or adjacent to the redevelopment area in accordance with the provisions of 36 CFR, Part 800, Section 106.

The 22 Bramhall Street Maine Medical Center Campus is located at a high point in the west end and The Campus is located in a densely developed urban setting consisting of the hospital, office buildings with their associated parking, public roadways and multi-family residential housing. The proposed project redevelopment location is bounded by Congress and Gilman Streets, the existing Central Heating Plant/Bean Building/Emergency entrance and the Visitor Parking Garage.

We have enclosed a site location map and a selection of keyed photographs for your use. At your earliest convenience, please review and forward your findings. If you have any questions

or need further information please do not hesitate to contact me at snichols@sebagotechnics.com.

Sincerely,

SEBAGO TECHNICS, INC.

Stefanie Nichols
Permitting Specialist/Project Coordinator

enc.

Section 9

Unusual Natural Areas

Section 9: Unusual Natural Areas

Sebago Technics recently requested an updated site review from the State of Maine Department of Agriculture, Conservation and Forestry Natural Areas Program (MNAP) for the presence of known mapped significant natural features within and adjacent to the project site. Due to the dense urban nature of the site we do not anticipate unusual natural areas to affect the proposed project. A copy of the letter to MNAP is enclosed in this section. The determination letter will be forwarded to the City upon receipt.

SEBAGO
TECHNICS

October 24, 2018
15466

Ms. Lisa St.Hilaire
Maine Natural Areas Program
93 State House Station
Augusta, ME 04333-0093

Re: Maine Medical Center
New Congress Street Patient Care Building
22 Bramhall Street, Portland

Dear Lisa:

Sebago Technics is in the process of updating resource letters as part of the required permit applications for proposed site improvements associated with the redevelopment of a portion of the Maine Medical Center Campus. This project includes the demolition and removal of the existing employee garage on the Bramhall Campus. In its place, MMC will build a new six-story medical building. The new building will provide new patient and procedure rooms and will include a new arrival/departure plaza and main entrance to the hospital on Congress Street.

As part of the applications, a review of by Maine Natural Areas Program for any lands that support rare and endangered plants, rare natural communities and ecosystems, and other natural communities and ecosystems in the vicinity of the proposed project area is requested.

For your reference, I have enclosed a USGS Site Location Map with the proposed project location identified. If you have any questions on this project, please do not hesitate to contact me at snichols@sebagotechnics.com or on my direct line at (207) 200-2120. I look forward to hearing from you.

Sincerely,

SEBAGO TECHNICS, INC.

Stefanie Nichols

Stefanie Nichols
Permitting Specialist/Project Coordinator

Section 10

Buffers

Section 10: Buffers

None of the proposed work area is located in a previously designated buffer area and no new dedicated buffering is proposed as part of this site development project.

Section 11

Soils

Section 11: Soils

A. Soil survey map and report

The project site is a redevelopment that includes razing and existing parking garage and redevelopment by constructing a new patient services building. A soil survey was not performed for the project. Soils classifications within the project area are referenced from the Cumberland County Medium-Intensity Soil Survey. The site is primarily comprised of Hinckley gravelly sand loam.

C. Geotechnical investigation

A geotechnical investigation was performed for the redevelopment site and the narrative is included in this section. The geotechnical evaluation indicates significant depths of granular fill overlaying glacial till.

D. Hydric soils mapping

Not applicable

REPORT DRAFT

February 21, 2017
16-1136 S

EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES
Proposed Congress Street Medical Office Building
Maine Medical Center Facility
Portland, Maine

SUBMITTED TO:
Maine Medical Center
Attention: Dennis Morelli, AIA
Director of Facilities Development
22 Bramhall Street
Portland, ME 04102

PREPARED BY:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, Maine 04039
(207) 657-2866
PKohler@swcole.com

S.W.COLE ENGINEERING, INC.

- *Geotechnical Engineering*
- *Construction Materials Testing and Special Inspections*
- *GeoEnvironmental Services*
- *Test Boring Explorations*

www.swcole.com

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DRAFT

LIST OF ATTACHMENTS

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Sheet 1.1 – 1.4	Subsurface Profiles A through F
Sheets 2 – 19	Recent Exploration Logs
Sheet 20	Key to the Notes and Symbols used on Logs
Sheet 21	Foundation Underdrain Detail
Appendix A	Boring Logs B-02-1, B-96-15 and B-96-16
Appendix B	S. W. Cole Laboratory Test Results
Appendix C	Katahdin Analytical Test Results

DRAFT

16-1136

February 20, 2017

Maine Medical Center
Attention: Dennis Morelli, AIA – Director of Facilities Development
22 Bramhall Street
Portland, ME 04102

Subject: Explorations and Geotechnical Engineering Services
Proposed Congress Street Medical Office Building
Maine Medical Center Facility
Portland, Maine

Dear Dennis:

In accordance with our Proposal, dated May 10, 2016, we have performed subsurface explorations for the subject project. We understand two projects are proposed; the Gilman Street Parking Garage and the Congress Street Medical Office Building. This report focuses on the proposed Medical Office Building and summarizes our findings and geotechnical recommendations. The contents of this report are subject to the limitations set forth in Attachment A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at certain areas of the site in order to provide geotechnical recommendations relative to foundations, earthwork and pavement associated with the proposed construction. Our scope of services included a review of prior subsurface explorations made at the nearby New Parking Garage (circa 2002), an exploration program consisting of test borings, soils laboratory testing, and a preliminary geotechnical analysis of the subsurface findings and preparation of this preliminary report.

DRAFT

1.2 Site and Proposed Construction

Based on information provided by Simpson Gumpertz & Heger (SGH - project structural engineer), we understand an 8-level medical office building is proposed on the Maine Medical Center (MMC) campus on the southerly side of Congress Street and westerly side of Gilman Street in Portland, Maine. The site of the proposed medical office building is situated in an area occupied by an existing circa 1970's parking garage and landscaped areas. We understand the existing 9-level parking garage will be demolished in favor of the proposed construction.

Based on the information provided, we understand the proposed 8-level, trapezoidal-shaped medical office building will be on the order of 295 by by 120 feet in plan dimensions. We understand the lowest floor level (level 5) will be at about elevation 38 feet (project datum). The highest floor level (Ground level) will be at about elevation 145 feet. The southerly wall line of the proposed building will be near and parallel to the existing southerly retaining wall of the existing parking garage. The northerly, westerly and easterly wall lines will be parallel to Congress Street, Gilman Street and the existing 2002 parking garage, respectively.

Although existing floor grade information for the existing parking garage is not available at this time, based on the exterior topographic information shown on Sheet 1 and visual observations at the site during drilling, it appears the on-grade slab of the parking garage slopes upward from about elevation 52 feet at the Gilman Street entrance to about elevation 65 feet at the easterly end of the garage. An interior ramp exists along a portion of the southerly wall line that slopes upward to the west to access the next level of parking. The ground surface on the northerly side of the existing parking garage (grassed and landscaped area) varies from about 43 feet at the intersection of Gilman and Congress Streets up to about 64 feet near the easterly end of the garage; roughly following the slope of Congress Street. Based on a proposed floor elevation of 38 feet for the lowest floor level (level 5) and the approximate existing grades, cuts on the order of 5 feet will be needed near the Gilman/Congress Street intersection; cuts on the order of 15 feet at the Gilman Street garage entrance and cuts on the order of 27 feet at the easterly end of the garage to achieve floor grade. Deeper cuts will be needed in the area of the existing interior ground floor ramp along the southerly parking garage wall line.

DRAFT

Based on concept drawings provided by SGH, we understand the southerly wall line of the proposed medical office building will utilize the existing parking garage wall as a new foundation wall from about elevation 65 feet (between floor levels 3 and 4) up to about level 1 floor grade (104 feet). Based on the topographic information shown on Sheet 1, the exterior grade along the southerly wall line of the garage (Crescent Street and landscaped areas) varies from about elevation 75 to 115 feet (west to east). Thus, the proposed floor grade (level 5) will be about 37 to 77 feet below existing grades on the southerly side of the garage.

Additionally, we understand the existing southerly parking garage wall will be left in place, underpinned, reinforced and supported using tie-backs for the new structure. Further, a new tie-back wall system is planned to support the excavation below the existing garage wall. The underpinning, tiebacks and wall system will be evaluated and designed by others.

Existing site features are shown on the "Exploration Location Plan" attached as Sheet 1. Proposed building location, site grading and structural loading information is not available at this time.

2.0 EXPLORATION AND TESTING

2.1 Explorations

2.1.1 Recent Explorations

Nine test borings (B-16-1 through B-16-9) were made from November 21 through December 9, 2016 by S. W. Cole Explorations, Inc., a subsidiary of S. W. Cole Engineering, Inc. (S.W.COLE) for the proposed Parking Garage and Congress Street Building. Borings B-16-5 through B-16-9 were made for the proposed Medical Office Building. The borings were made outside the footprint of the existing garage area. Due to the low head room in the garage, no borings were made within the garage footprint.

The approximate locations of the test borings made are shown on the "Exploration Location Plan" attached as Sheet 1. Generalized subsurface profiles for both the proposed Gilman Parking Garage and the proposed Congress Street Medical Office Building sites are attached as Sheets 1.1 and 1.4.

DRAFT

Logs of the test borings made for both the Proposed Parking Garage and the Proposed Medical Office Building sites are attached as Sheets 2 through 19. The elevations shown on the logs were estimated based on topographic information shown on Sheet 1. A key to the notes and symbols used on the boring logs is attached as Sheet 20.

2.1.2 Previous Explorations

Several test borings were made for the existing newer parking garage (circa 2002). Two borings (B-96-15 and B-96-16) were made near the easterly side of the proposed Medical Office Building site. The approximate locations of these two test borings are shown on Sheet 1. Additionally, the approximate location of Boring B-02-1, made in the northwest corner of the existing Central Utility Plant, is shown on Sheet 1. The logs for these three borings are attached in Appendix A. Logs of other borings and test pits made for nearby sites can be found in the previous geotechnical reports.

2.2 Testing

The recent test borings were drilled using a combination of hollow stem auger and cased wash-boring techniques. The soils were sampled at 2 to 10 foot intervals using a split spoon sampler and Standard Penetration Testing (SPT) methods. SPT blow counts are noted on the logs. Pocket penetrometer testing (PPT) was performed on stiffer cohesive soil samples. Shelby Tube sampling and in-situ vane shear testing (VST) were performed in softer cohesive soils. SPT blow counts, PPT and VST results are shown on the logs.

Soil samples obtained during drilling were returned to our laboratory for classification and testing. The results of soil moisture content and Atterberg limit testing are noted on the logs. Results of soil gradation tests and a one-dimensional laboratory consolidation tests performed on a Shelby Tube sample from Boring B-16-3 are attached in Appendix B.

A soil sample from boring B-16-8 2D (2.3'-4.3') was submitted to Katahdin Analytical Services for determination of pH (SW846 9045D), water soluble chloride content (EPA 325.2) and water soluble sulfate content (EPA 375.4). Results are included in Appendix C.

DRAFT

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Surficial

The site of the proposed Medical Office Building is located at the site of an existing parking garage (circa 1970's) on the southeasterly side of the intersection of Congress and Gilman Streets. The existing 9-level garage occupies a majority of the southerly portion of the site and is on the order of 340 by 120 feet in plan dimensions. The sloped on-grade garage floor varies from about elevation 52 feet on the west side (Gilman Street entrance) to about elevation 65 feet on the east side. The remainder of the site is landscaped and varies from about elevation 43 feet at the intersection of Congress and Gilman Streets to about 64 feet on the east end of the site. A newer parking garage (circa 2002) exists on the easterly side of the site. The Central Utility Plant exists at the southwesterly corner of the site. Crescent Street and landscaped areas exist on the southerly side of the site varying from about elevation 75 to 115 feet (west to east).

Existing site features are shown on the "Exploration Location Plan" attached as Sheet 1.

3.2 General Geological Conditions

Overburden mapping by the Maine Geological Survey (MGS) describes the unconsolidated overburden as Urban Fill overlying marine clay and glacial till. This is consistent with boring logs for the area, describing variable sand, silt, and gravel material locally with debris. Bedrock depths were generally about 65 to 73 feet below ground surface (bgs) where encountered. The bedrock geology has been described by the MGS, (Hussey, 2003) as stratified meta-sedimentary rock of Silurian-Ordovician age (Eliot Formation), descried as quartz-plagioclase-biotite phyllite. Linear features trending approximately north-south and north 35° to 55° east.

3.3 Soil and Bedrock

Below the existing concrete pavement and topsoil, the explorations encountered a soil profile generally consisting of granular and clayey fill overlying glaciomarine clay overlying sandy soils overlying glacial till and probable bedrock with depth. The principal strata encountered in the explorations are summarized below; refer to the attached logs for detailed subsurface information. Not all the strata were encountered at each of the explorations.

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Topsoil: Borings B-16-6 through B-16-8 encountered about 12 to 18 inches of topsoil and/or bark mulch at the surface.

Pavement: Borings B-16-5 and B-16-9 encountered about 6 inches of concrete pavement at the surface.

Uncontrolled Fill: Borings B-16-5 through B-16-9 encountered generally loose to medium dense uncontrolled fill varying from about 3 to 13 feet in thickness. The uncontrolled fill generally consists of sand with varying amounts of silt and gravel, as well as sandy, clayey silt. Boring B-16-6 encountered what may be the concrete foundation for the existing parking garage at a depth of about 4 feet. Thus, the boring was shifted about 4 feet north. This area may have been developed prior to the construction of the parking garage. Thus, miscellaneous uncontrolled fill, existing and relic foundations and subsurface utilities should be expected.

Glaciomarine Clay: Below the fill, Borings B-16-5 through B-16-7 encountered a glaciomarine deposit of stiff brown silty clay to depths varying from about 10.5 to 19.5 feet. Gray silty clay of medium consistency was encountered below the brown silty clay at Borings B-16-5 and below the fill at B-16-8. The gray silty clay deposit is about 5 feet thick at these two locations. The glaciomarine deposit was not observed at B-16-9.

Based on the laboratory consolidation testing of a Shelby Tube sample at Boring B-16-3, the gray silty clay in this area appears to be over-consolidated by about 1,500 psf. In-situ vane shear test results performed in the gray silty clay at nearby B-16-1 and B-16-3 were about 850 to 1,000 psf virgin strength and 130 to 220 psf remolded strengths.

Outwash Sands: Below the glaciomarine clay deposit or fill, the borings encountered a deposit of loose to medium dense outwash sand with zones of clay and silt layers. In general, the sand thickness ranged from about 4 to 21 feet at borings B-16-5 through B-16-9.

Glacial Till: Medium dense to very dense glacial till generally consisting of sand and silt with varying amounts of gravel with zones having a trace to some clay was encountered below the outwash sands at depths varying from about 15 to 38 feet below the ground surface at borings B-16-5 through B-16-9.

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The depth to glacial till was shallowest at boring B-16-9. Cobbles were encountered occasionally during drilling. The glacial till may also contain some boulders. Borings B-16-7 through B-16-9 were terminated in very dense glacial till at depths of 79.5 to 81.5 feet below the existing ground surface.

Refusal Surfaces: Probable bedrock was encountered at depths of about 73 and 68 feet below the existing ground surface at Borings B-16-5 and B-16-6, respectively. A roller cone was advanced about 2 feet into the probable bedrock surface at these two borings.

3.4 Groundwater

The soils were generally moist from the ground surface. The borings were started with hollow-stem augers and then switched to cased wash-borings at depth, upon which water was introduced obscuring groundwater observations during drilling. In general, it appears perched water exists within the fills at depths of about 5 to 10 feet. Groundwater piezometers were installed at borings B-16-8 and B-16-9. Water levels in the piezometers were measured to be about 14 and 31 feet below the ground surface at these two boring locations, respectively, on January 4, 2017. Based on the moisture content test results, the softer gray silty clay and underlying glacial till are at or near saturation.

Long-term groundwater levels were not determined. It should be anticipated that groundwater will be perched atop silty and clayey soils as well as the underlying glacial till. Groundwater levels should be expected to fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

3.5 Frost and Seismic

The 100-year Air Freezing Index for the Portland, Maine area is about 1,407-Farenheit degree-days, which corresponds to a frost penetration depth on the order of 4.5 feet. Based on the subsurface findings, we interpret the site soils to correspond to Seismic Soil Site Class D according to IBC 2009/ASCE 7-05. We offer the following seismic design parameters for consideration:

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RECOMMENDED SEISMIC DESIGN PARAMETERS (2,500-year Design Earthquake)		
Peak Ground Acceleration (PGA)	0.2-second Spectral Acceleration (S_s)	1-second Spectral Acceleration (S_1)
0.17 g	0.242 g	0.078 g

NOTE: Seismic design parameters from USGS.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- Due to the presence of uncontrolled fills, variable thickness of soft to medium compressible glaciomarine clays and loose to medium dense sands with silt and clay layers, beneath the westerly portion of the site, anticipated heavy column loads as well as anticipated differential settlement between foundations supported on the medium dense glacial till (easterly side) and variable glaciomarine clays and outwash sands (westerly side), we recommend the proposed medical office building structure be supported on a deep foundation consisting of driven piles bearing in the very dense glacial till or on bedrock. Alternatively, a specialty ground improvement contractor can be consulted to assess the suitability of using ground improvement techniques such as rammed aggregate piers (RAPs) or geo-concrete columns (GCCs) to improve the soils sufficiently for potential spread footings.

- Based on the information at the boring locations, it appears cuts varying from about 5 to 27 feet, or greater, will be needed to achieve floor grade for level 5 (lowest floor elevation). Based on the findings at borings B-16-5 through B-16-9, it appears that in general, the subgrade for the proposed first level slab-on-grade floor will consist of existing loose to medium dense fill, stiff brown silty clay, softer gray silty clay and medium dense sands with varying amounts of silt and clay layers in the westerly portion of the proposed building footprint and medium dense glacial till in the easterly portion.

- It is our opinion that the floor slab can be supported on properly prepared soil subgrades. Existing foundations, fill and soft, disturbed soils will need to be removed prior to placing new fills. We recommend on-grade slabs be underlain

with at least 12 inches of compacted Crushed Stone overlying a non-woven geotextile fabric to provide a drainage layer and passive radon venting if deemed necessary by the project structural engineer. The Crushed Stone should be positively connected to foundation and sub-slab underdrains drains.

- The site is developed with many years of various development likely including previous structures and foundations, uncontrolled fills and subsurface utilities. Thus, uncontrolled fills, relic foundations and other manmade structures and utilities should be expected during excavation including the foundation system for the existing garage.

- Conventional asphalt pavements appear suitable for proposed parking areas, entrances and sidewalks. The pavement gravels should be positively connected to foundation drains. Existing granular fills should be densified by proof-rolling and soft areas removed and replaced with additional pavement sub-base aggregate.

- Based on the subsurface findings and our understanding of the proposed construction, the proposed 5 to 22 foot cuts along Congress and Gilman Streets appears feasible from a geotechnical standpoint. Braced shoring will be needed to support surrounding grades, structures and utilities during construction. Perched groundwater should be expected in the soils. We understand evaluation and design of excavations, water control, bracing and shoring, underpinning, reinforcing and tie-back anchorage will be by others.

- Structural Fill, Crushed Stone, and pavement base and sub-base gravels will be required for construction. Existing soils are unsuitable for reuse.

4.2 Settlement Analysis

We have made an estimate of post-construction settlement of the underlying medium dense glacial till (east side) and variable glaciomarine clays and outwash sands (westerly side). Our estimate is been based on:

1. A proposed finished floor elevation of 38 feet;
2. Subsurface information found at borings B-16-7 and B-16-9,
3. An assumed column load of 400 kips and soil contact pressure of 4 ksf.

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Our field and laboratory testing from boring B-16-4 indicates that the gray silty clay soils beneath the site are over-consolidated by about 1.5 ksf.

We estimate that settlement of the glaciomarine clays and outwash sands (westerly side) beneath an individual square footing with a contact pressure of 4 ksf could result in several inches of total post-construction settlement. We estimate that post-construction settlement of the existing medium dense glacial till (easterly side) could be on the order of 1 inch. The estimated post-construction settlement on the westerly side and the anticipated differential settlement between glacial till supported foundations and foundations supported on the glaciomarine clays and outwash sands on the easterly side are not considered within tolerable limits for the proposed structure, if supported on shallow spread footings. Thus, we recommend the structure be supported on driven piles. Alternatively, consideration can be given to ground improvement using rammed aggregate piers (RAPs) or Geo-Concrete Columns (GCCs) to improve ground conditions for spread footing foundation support.

4.3 Pile Foundations

Considering the subsurface findings, steel H-piles and steel pipe piles driven to end-bearing in the glacial till stratum or on bedrock appear well-suited for foundation support of the proposed structure. We understand that the pile type, size, driving criteria and allowable loads will be provided by a design-build contractor using design loading information provided by SGH (project structural engineer). We offer the following common pile types and estimated capacities for preliminary design:

Estimated Pile Capacities		
Pile Type	Section	Estimated Allowable Axial Compressive Capacity (kips)
Concrete Filled Steel Pipe Pile, 46-ksi steel, driven to practical refusal. 0.25" min wall thickness, Closed End, flat plate at tip	10 ¾" diameter 12 ¾" diameter	180 220
Steel H-Pile with cast driving tips, 50-ksi steel, driven to practical refusal. Assumes 1/16" corrosion	HP 12 x 53	190
	HP 12 x 74	290
	HP 14 x 89	340
	HP 14 x 117	500

All grade beams, pile caps and foundations exposed to freezing temperatures should extend at least 4.5 feet below finished grade. Piles should be spaced a minimum center- to-center distance of at least 3 pile diameters, but no less than 30 inches. Piles in groups should be driven from the interior working outward to preclude densification and excessively hard driving conditions on the interior. We recommend that a working mat of at least 8 inches of Crushed Stone be provided below all pile caps and grade beams.

Passive soil lateral resistance acting on grade beams and pile caps backfilled with compacted Select Fill should consider a total unit weight of compacted granular backfill (γ_t) of 125 pcf, an angle of internal friction of 32 degrees and a passive lateral earth pressure coefficient (K_p) of 3.3. Several inches of lateral deflection may be required to fully mobilize passive lateral earth pressures. We recommend that the surficial 3 feet of soil around the structure not be included in passive soil lateral resistance. Additional resistance to lateral loads can be mobilized along the pile shafts. S.W.COLE can assist with evaluation of lateral pile capacity, if requested. Battered piles can be considered to help resist lateral loads.

Considering the depths to glacial till and probable bedrock encountered at test borings B-16-5 and B-16-6 and a first level floor slab elevation 38 feet (project datum), we estimate pile lengths may range from about 55 to 75 feet. Because subsurface conditions vary across the site, the actual tip elevations and lengths of driven piling will vary. To assess this variability and to better refine estimates for pile lengths, we recommend that several test piles be driven at different locations across the site before production piles are driven.

The IBC International Building Code (2009) requires that pile load tests be performed on piles with design capacities over 40 tons (80 kips). We recommend monitoring the test piles with a Pile Driving Analyzer (PDA) to assess pile capacity and to define the "set" or stop driving criteria. In any case, the pile driving contractor should submit information relative to pile driving equipment and a WEAP analysis for geotechnical review prior to beginning driving. S.W.COLE should be retained to review the pile submittal and to observe the test pile program and driving of production piles.

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We recommend pre-construction surveys of adjacent structures be completed prior to pile driving and that construction vibrations be monitored. S.W.COLE can assist with pre-construction surveys of adjacent structures and vibration monitoring during construction.

4.4 Spread Footing Foundations

As mentioned above, a specialty ground improvement contractor can be consulted to assess the suitability of the underlying soils for potential ground improvement techniques to support potential spread footings. Footings should be underlain with at least 12 inches of Crushed Stone wrapped in non-woven geotextile filter fabric, such as Mirafi 180N, bearing on properly prepared subgrades as designed by a specialty ground improvement contractor. For foundations bearing on properly prepared subgrades, we offer the following preliminary geotechnical parameters for design consideration following successful ground improvement program:

Geotechnical Parameters for Spread Footings and Foundation Walls	
Design Frost Depth	4.5 feet
Net Allowable Soil Bearing Pressure (Improved Ground)	Estimate 4.0 ksf to be determined by Specialty Contractor
Base Friction Factor	0.35
Total Unit Weight of Backfill (compacted Structural Fill)	130 pcf
Internal Friction Angle of Backfill (compacted Structural Fill)	30°
At-Rest Lateral Earth Pressure Coefficient	0.5
Total Post-Construction Settlement	Determined by Specialty Contractor
Differential Post-Construction Settlement	Determined by Specialty Contractor

We anticipate the RAPs or GCCs would need to extend through existing fills and glaciomarine clays and sands to transfer loads to the underlying stable glacial till soils. If ground improvement is selected, we recommend the contract documents require an engineered submittal for the ground improvement technique to improve ground conditions to meet or exceed the geotechnical parameters for bearing capacity and settlement requirements selected by the structural engineer. The submittal must include QC and modulus testing procedures. We recommend load tests be completed prior to installing production ground improvement elements. The submittal must be

prepared and sealed by a Professional Engineer licensed in the State of Maine and endorsed by the Installer.

4.4 Foundation Walls

Based on the proposed on-grade slab elevation, it appears a deep cut will be needed along Congress and Gilman Streets. We offer the following geotechnical soil parameters for foundation wall design consideration:

Geotechnical Parameters for Foundation Walls	
Design Frost Depth	4.5 feet
Base Friction Factor (concrete on Crushed Stone)	0.35
Subgrade Reaction Modulus, k_s	120 pci
Total Unit Weight of Backfill (compacted Structural Fill)	130 pcf
Internal Friction Angle of Backfill (compacted structural fill)	32°
At-Rest Lateral Earth Pressure Coefficient (K_o)	0.5
At-Rest Lateral Earth Pressure (equivalent fluid)	65 pcf
Surcharge Lateral Area Load Coefficient	0.5

Note: The above parameters do not apply to proposed retaining walls or the existing parking garage wall.

4.5 Slab-On-Grade

We recommend all slab-on-grade areas be over-excavated to allow for at least 12 inches of compacted Crushed Stone overlying a non-woven geotextile fabric such as Mirafi 180N. The on-grade floor slab may be designed using a subgrade reaction modulus of 120 pci (pounds per cubic inch) provided the slab is underlain by at least 12 inches of compacted Crushed Stone overlying a non-woven geotextile fabric and properly prepared subgrades. The structural engineer or concrete consultant must design steel reinforcing and joint spacing appropriate to slab thickness and function.

We recommend a sub-slab vapor retarder particularly in areas of the building where the concrete slab will be covered with an impermeable surface treatment or floor covering that may be sensitive to moisture vapors. The vapor retarder must have a permeance that is less than the floor covering or surface treatment that is applied to the slab. The vapor retarder must have sufficient durability to withstand direct contact with the sub-slab base material and construction activity. The vapor retarder material shall be placed according to the manufacturer's recommended method, including the taping and lapping

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of all joints and wall connections. The architect and/or flooring consultant should select the vapor retarder products compatible with flooring and adhesive materials.

Floor slabs should be appropriately cured using moisture retention methods after casting. Typical floor slab curing methods should be used for at least 7 days. The architect or flooring consultant should assign curing methods consistent with current applicable American Concrete Institute (ACI) procedures with consideration of curing method compatibility to proposed surface treatments, flooring and adhesive materials.

4.6 Foundation Drainage

We recommend that an exterior perimeter foundation drainage system be provided near pile cap/foundation subgrade (4.5 feet minimum depth). We also recommend sub-slab underdrains be provided within the Crushed Stone at a spacing of about 15 to 20 feet on center. The underdrain pipe should consist of rigid, 4-inch diameter perforated SDR-35 foundation drain pipe with perforations of ¼ to ½ inch enveloped in 12 inches of MaineDOT 703.22 Underdrain Backfill Type C Crushed Stone bedding wrapped in a non-woven geotextile filter fabric such as Mirafi 180N. The underdrain must have a positive gravity outlet protected from freezing, clogging and backflow. Exterior foundation backfill should be sealed with a surficial layer of clayey or loamy soil in areas that are not to be paved or occupied by entrance slabs in order to reduce surface water infiltration into the foundation backfill. Surface grades should be sloped away from the building for positive surface water drainage. Details of the recommended foundation drainage system are presented on the attached Sheet 21.

4.7 Entrances, Sidewalks and Exterior Slabs

Entrance approaches, sidewalks and exterior slabs should be designed to reduce the effects of differential frost action between doorways and entrances. We recommend that excavations beneath the entire width and length of entrances, sidewalks, and exterior slabs, continue to at least 4.5 feet below finish grade. These areas should be backfilled with compacted non-frost susceptible granular fill meeting the Structural Fill gradation to limit abrupt heave or differential movement. The zone of Structural Fill adjacent to exterior foundations and below entrance slabs and sidewalks should transition up to the bottom of adjacent sidewalk or pavement subbase gravel at a 3H:1V or flatter slope (see details on Sheet 21).

4.8 Excavation, Grading and Dewatering

An erosion control system should be instituted prior to any construction activity at the site to help protect adjacent drainage ways. As much vegetation and existing pavement should remain in-place over areas of inactive construction to lessen the potential for erosion. Excavation work will encounter uncontrolled fills generally consisting of silty sand and gravel, relic foundations and utilities. Below the fills, excavation will encounter stiff brown silty clay and softer gray silty clay. The subgrades will be sensitive to disturbance from construction activity. Construction equipment should not operate directly on wet to saturated subgrades nor on the native silts and clays. Pre-excavating or pre-augering at proposed pile or ground improvement element locations may be needed in some areas. Over-excavated areas should be replaced with compacted Structural Fill or Pavement Subbase, as appropriate. A woven geotextile fabric may be needed below the compacted fill if the subgrade is wet, soft or unstable. The on-site soils are unsuitable for reuse in construction.

Based on the findings at the explorations during drilling, groundwater and wet soil conditions will likely be encountered in foundation excavations deeper than about 10 feet below existing grades. In our opinion, ditching with sump and pump dewatering techniques at a minimum should be anticipated to control groundwater in shallow footing excavations. It may be necessary to place a layer of geotextile filter fabric and crushed stone to act as a drainage media from which to sump and pump. Deeper excavations, will likely require braced sheet pile shoring for groundwater cutoff and excavation stability. In any case, excavations must be properly shored and/or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the excavation.

4.9 Backfill and Compaction

Based on the subsurface findings, the existing site soils are unsuitable for reuse as fill and backfill in building areas but may be reused in landscape areas. We recommend the following fill and backfill materials:

Geotextile Fabrics: Non-woven geotextile fabric (such as Mirafi 180N) for use as a filter media fully wrapping the Crushed Stone surrounding the underdrain piping. Woven geotextile fabric (such as Mirafi 600X) for use in areas requiring over-excavation and for silty clay subgrades beneath floor slab areas. Geotextile fabric is not recommended at proposed pile locations.

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Structural Fill: Backfill below floor slabs, entrance slabs, exterior slabs, in depressions left from removal of existing foundations and adjacent to new foundations should consist of clean, non-frost susceptible sand and gravel meeting the following gradation requirements.

Structural Fill	
Sieve Size	**Percent Finer by Weight**
4 inch	100
3 inch	90 to 100
¼ inch	25 to 90
#40	0 to 30
#200	0 to 5

Crushed Stone: Crushed Stone used around underdrains and as the working mat at all pile cap and grade beam locations should consist of crushed rock meeting the gradation requirements of MaineDOT Standard Specifications 703.22 "Underdrain Backfill Type C".

MaineDOT 703.22 Underdrain Backfill Type C – Crushed Stone	
Sieve Size	**Percent Finer by Weight**
1 inch	100
¾ inch	90-100
⅜ inch	0-75
#4	0-25
#10	0-5

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill activities should not exceed 12 inches. We recommend that fill and backfill in building areas be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557. Crushed Stone should be compacted in loose lifts not exceeding 12 inches with a vibratory plate compactor with a static weight of at least 500 pounds. Soft or yielding areas should be over excavated and replaced with the woven geotextile fabric and additional sub base aggregates.

4.10 Pavement

We anticipate that asphalt pavement is proposed in entrance drives and some sidewalk areas. We also anticipate pavement will be primarily subjected to passenger vehicle and light delivery truck traffic. Considering the site soils and proposed usage, we offer the following pavement section for consideration. Materials are based on 2014 Maine Department of Transportation (MaineDOT) Standard Specifications.

Pavement Layer	Standard Duty
MaineDOT 9.5 mm Hot Mix Asphalt (50 Gyration Design)	1¼ inches
MaineDOT 19.0 mm Hot Mix Asphalt (50 Gyration Design)	2¼ inches
MaineDOT 703.06 Aggregate Base Type A	3 inches
MaineDOT 703.06 Aggregate Sub base Type D	15 inches

We recommend placing woven geotextile fabric such as Mirafi 600X on silty or clayey subgrades prior to placing subbase material. Soft or yielding areas should be over excavated and replaced with additional subbase aggregate underlain by woven geotextile fabric, as needed.

The base and subbase materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557. The surface and binder layers of hot mix asphalt should ideally be placed during the same construction season. We recommend that bituminous pavements be compacted to 92 to 97 percent of their theoretical maximum densities as determined by ASTM D-2041. A tack coat should be used between successive lifts of bituminous pavement.

It should be understood that frost penetration can be on the order of 4.5 feet in this area. In the absence of full depth excavation of frost susceptible soils below paved areas and subsequent replacement with non-frost susceptible compacted fill, frost penetration into the subgrade will occur and some heaving and distress of pavement must be anticipated. We recommend consideration be given to providing perimeter drainage swales and underdrains beneath paved areas to help drain pavement gravels.

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4.11 Weather Considerations

Subgrades, foundations and floor slabs must be protected from freezing conditions. Fill soils and concrete must not be placed on frozen soil and once placed, the soil beneath the structure must be protected from freezing. Further, the uncontrolled fills and native site soils are moisture sensitive and as such subgrades will be susceptible to disturbance during wet and freeze-thaw conditions. Consequently, site work and construction activities should take appropriate measures to protect exposed subgrades, particularly during wet and freezing conditions. This may require the use of temporary haul roads and staging areas to preclude subgrade damage due to construction traffic. Geotextile fabric may also be needed below haul roads, staging and proposed slabs to help stabilize subgrades.

4.12 Design Review and Construction Testing

S.W.COLE should be retained to review the construction documents before bidding to determine that our earthwork, foundation and pavement recommendations have been properly interpreted and implemented.

S.W.COLE should be retained to provide geotechnical observation and testing services for the piling, excavation and foundation phases of construction. This is to observe compliance with the design recommendations, drawings and specifications and to allow design changes in the event that subsurface conditions are found to differ from those anticipated prior to the start of construction.

A Special Inspections program including observation of pile installation, reinforced concrete, structural masonry and structural steel should also be implemented during construction to observe compliance with the construction documents. S.W.COLE is available to provide Special Inspections and testing services for piling, soils, concrete, steel, spray-applied fireproofing and asphalt construction materials.

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5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you as the design progresses and during the construction.

Sincerely,

S. W. Cole Engineering, Inc.

Paul F. Kohler, P.E.
Senior Geotechnical Engineer

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Attachment A
Limitations

This report has been prepared for the exclusive use of Maine Medical Center for specific application to the proposed Medical Office Building project located on the southeasterly side of the intersection of Gilman and Congress Streets in Portland, Maine. Information provided in this report from the nearby proposed Gilman Street Parking Garage site or other past projects is included for informational purposes. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

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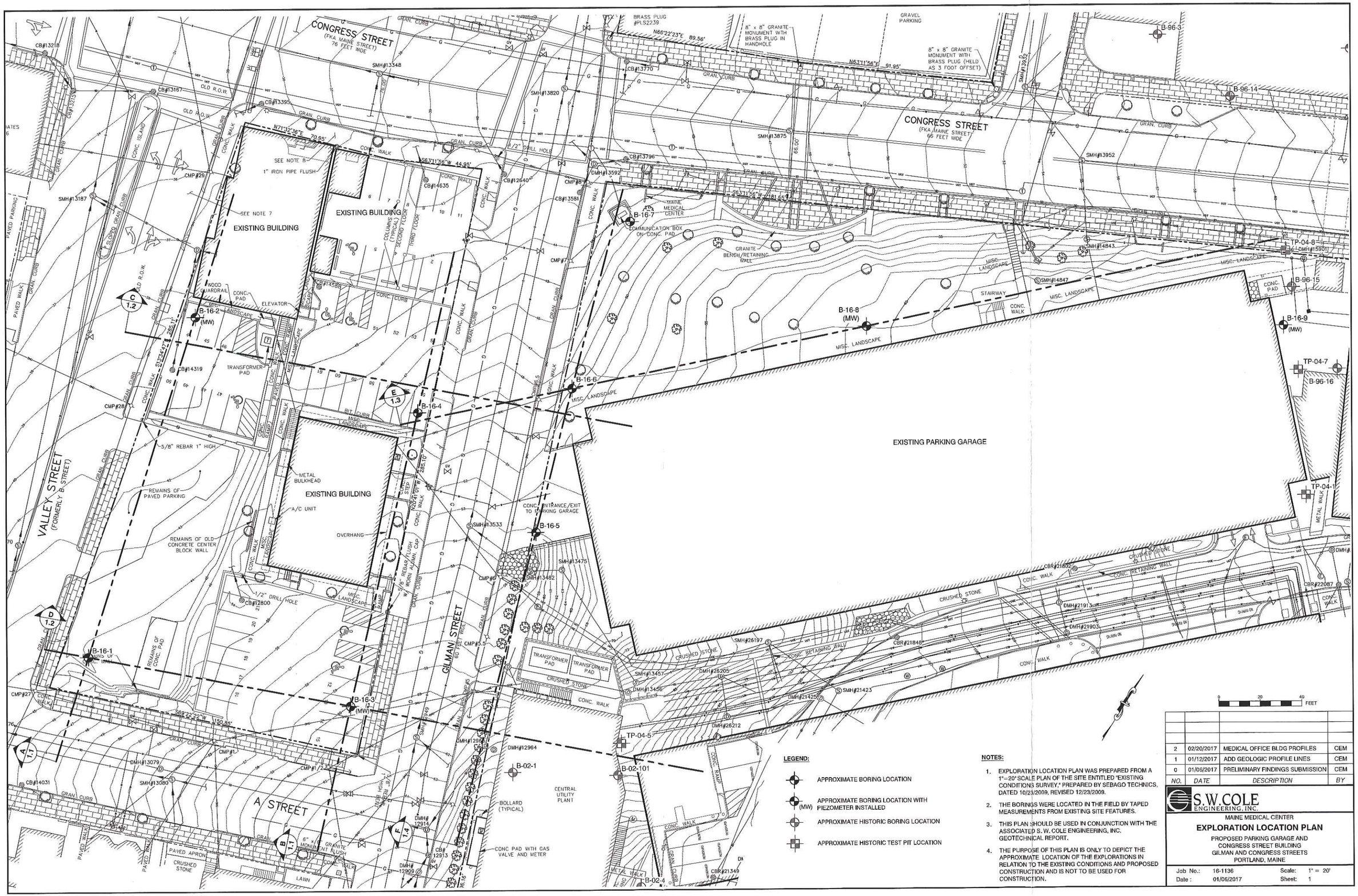


LEGEND:

- APPROXIMATE BORING LOCATION
- (MW) APPROXIMATE BORING LOCATION WITH PIEZOMETER INSTALLED
- APPROXIMATE HISTORIC BORING LOCATION
- APPROXIMATE HISTORIC TEST PIT LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A 1"=20' SCALE PLAN OF THE SITE ENTITLED "EXISTING CONDITIONS SURVEY," PREPARED BY SEBAGO TECHNICS, DATED 10/23/2009, REVISED 12/23/2009.
2. THE BORINGS WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE APPROXIMATE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

NO.	DATE	DESCRIPTION	BY
2	02/20/2017	MEDICAL OFFICE BLDG PROFILES	CEM
1	01/12/2017	ADD GEOLOGIC PROFILE LINES	CEM
0	01/06/2017	PRELIMINARY FINDINGS SUBMISSION	CEM

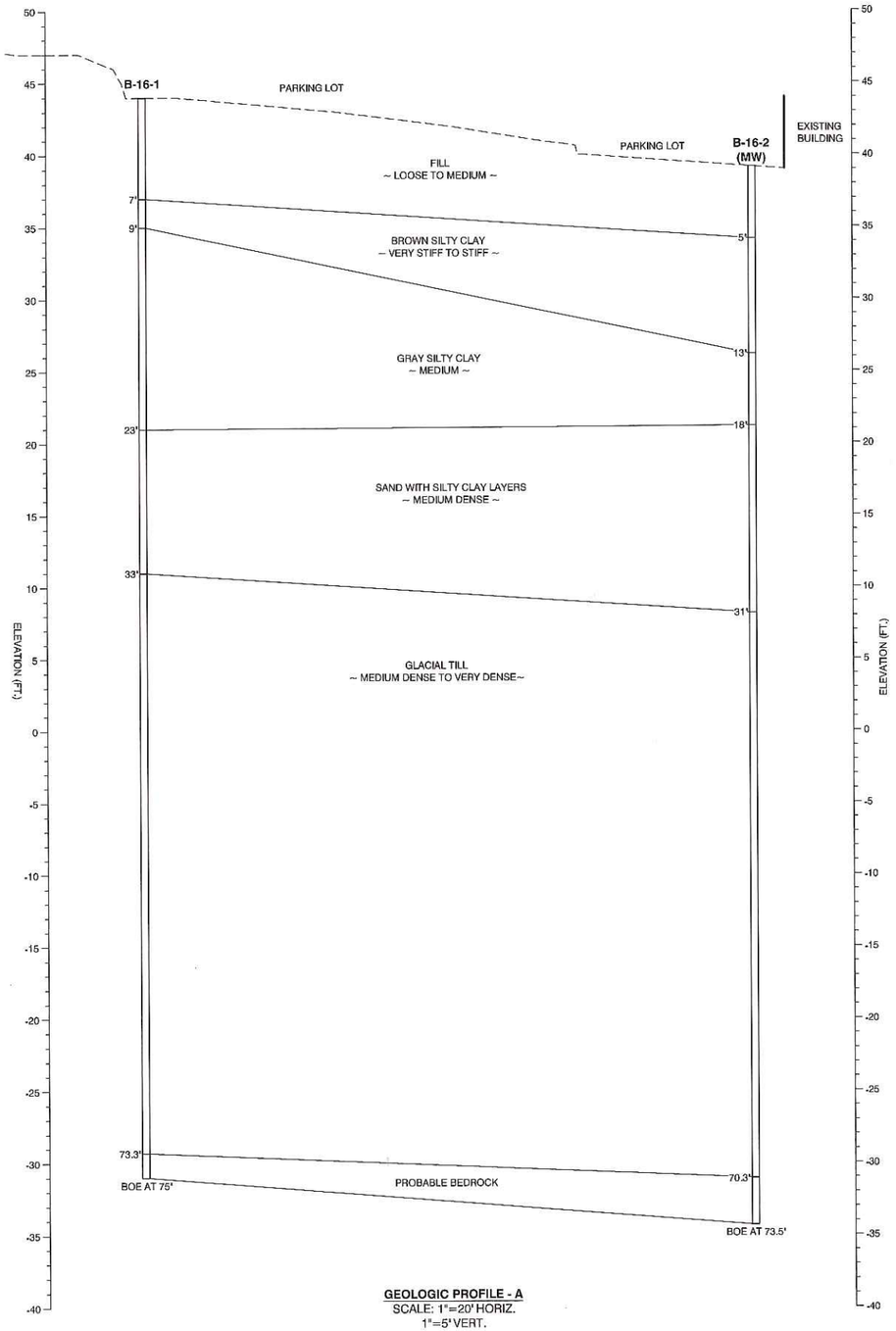
S.W.COLE ENGINEERING, INC.

MAINE MEDICAL CENTER

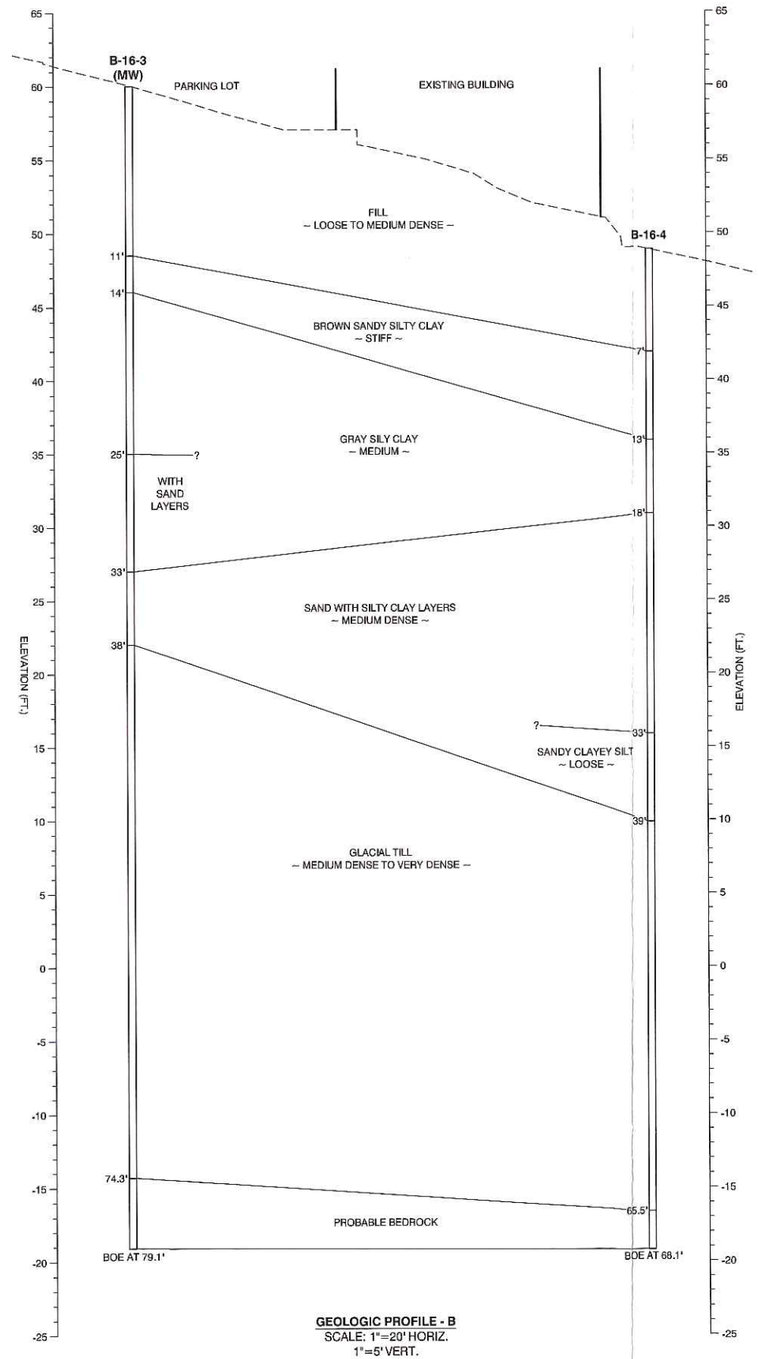
EXPLORATION LOCATION PLAN

PROPOSED PARKING GARAGE AND
CONGRESS STREET BUILDING
GILMAN AND CONGRESS STREETS
PORTLAND, MAINE

Job No.: 16-1136 Scale: 1" = 20'
Date: 01/06/2017 Sheet: 1



GEOLOGIC PROFILE - A
SCALE: 1"=20' HORIZ.
1"=5' VERT.



GEOLOGIC PROFILE - B
SCALE: 1"=20' HORIZ.
1"=5' VERT.

LEGEND

B-16-4 (MW)	BORING NUMBER PIEZOMETER INSTALLED
	APPROXIMATE EXISTING GROUND SURFACE
7'	STRATA CHANGE
SILT	STRATA DEFINITION
BOE	BOTTOM OF EXPLORATION

NOTES:

1. THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTION WERE GENERALIZED FROM AND INTERPOLATED BETWEEN EXPLORATION LOCATIONS. THE TRANSITION BETWEEN MATERIALS MAY BE MORE OR LESS GRADUAL THAN INDICATED. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE SPECIFIC LOCATIONS INDICATED AND AT THE TIME OF EXPLORATION. SEE BORING LOGS FOR MORE DETAILED INFORMATION.

NO.	DATE	DESCRIPTION	BY
.	.	.	.
0	01/12/2017	PRELIMINARY FINDINGS SUBMISSION	CEM

S.W. COLE ENGINEERING, INC.

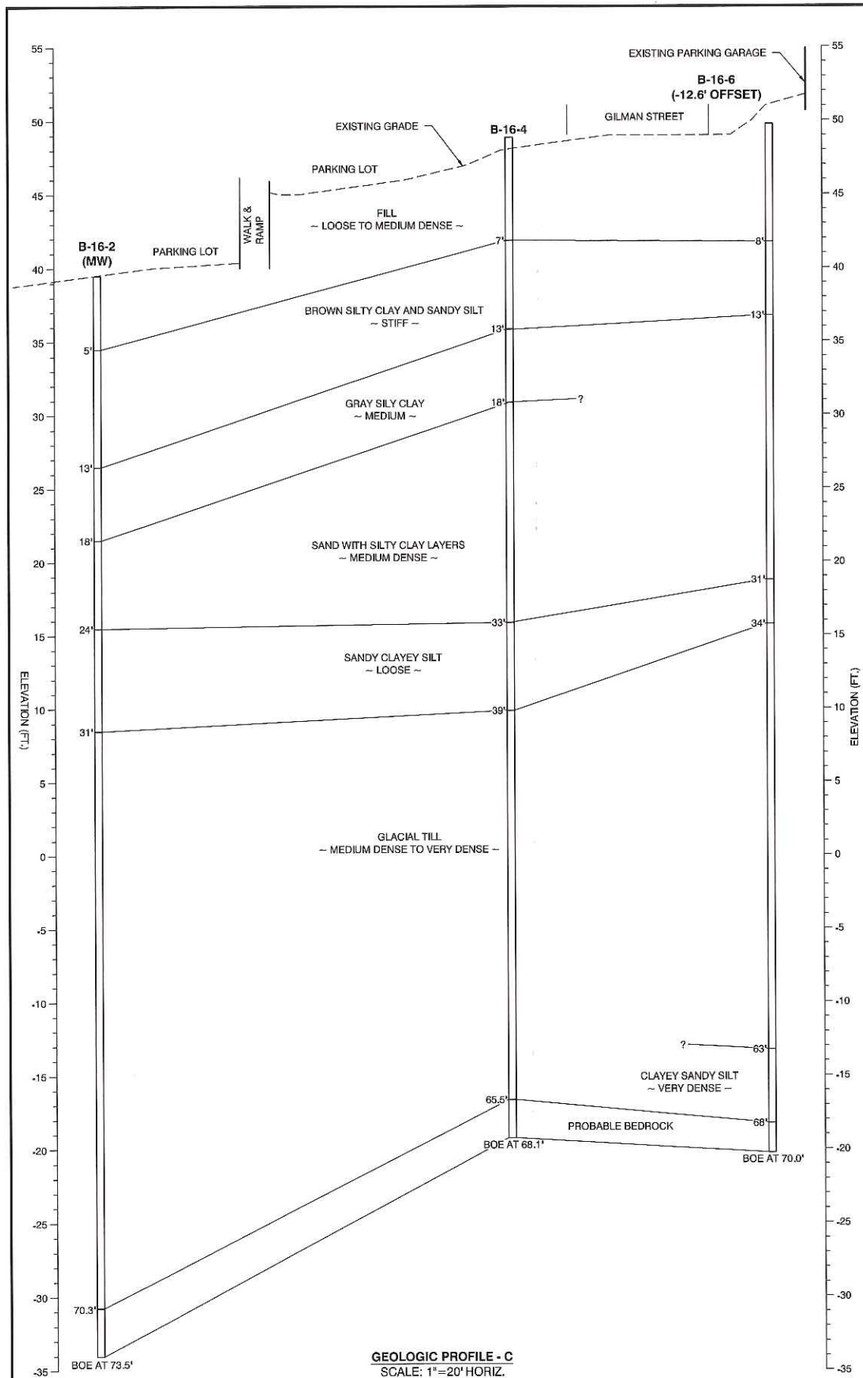
MAINE MEDICAL CENTER

GEOLOGIC PROFILES A & B

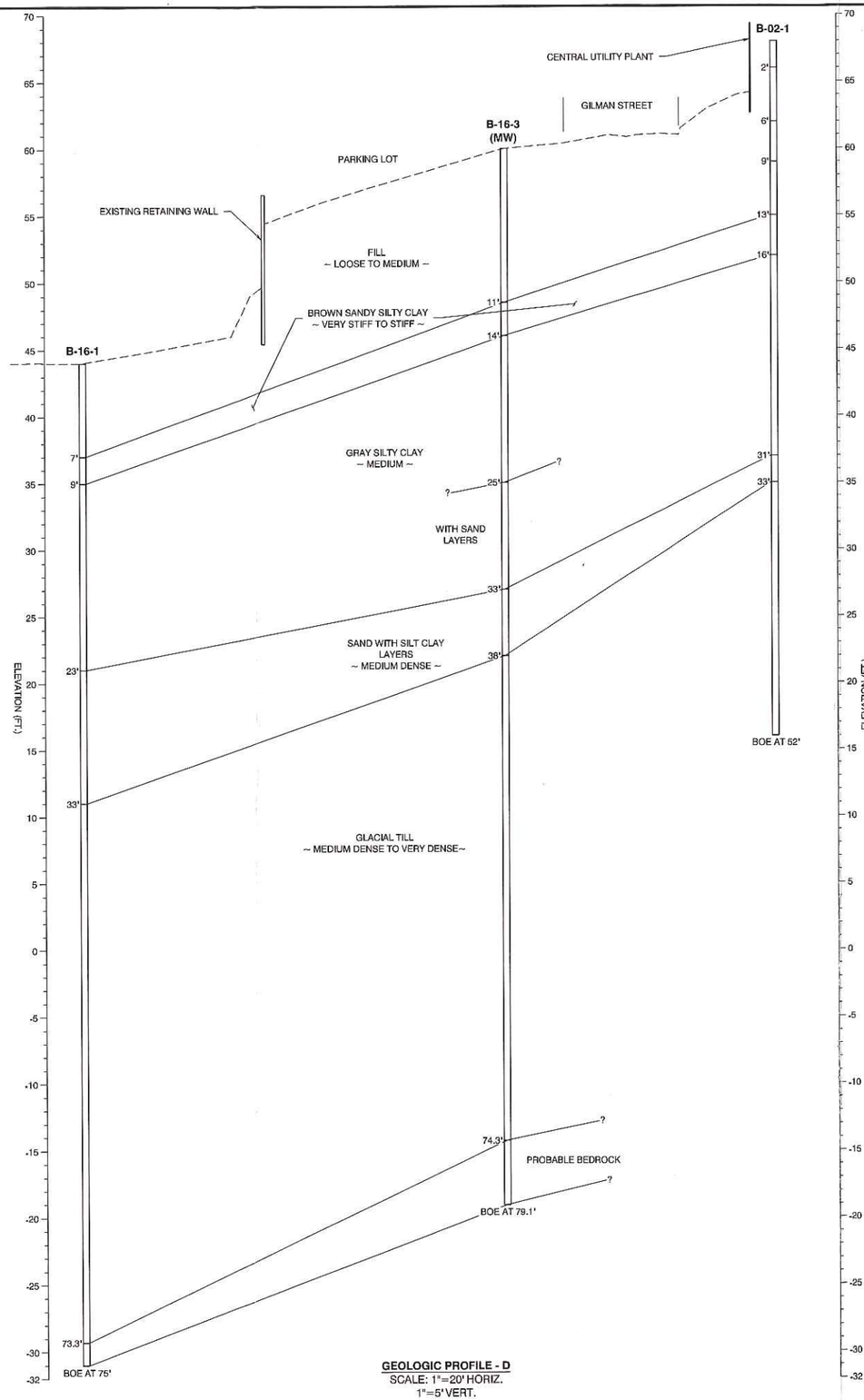
PROPOSED PARKING GARAGE AND
CONGRESS STREET BUILDING
GILMAN AND CONGRESS STREETS
PORTLAND, MAINE

Job No.:	16-1136	Scale:	1" = 20'
Date :	01/12/2017	Sheet:	1.1

K:\2016\16-1136\CAD\Drawings\16-1136.DP.dwg, 2/20/2017 7:12:21 AM, JL CAD-L W Cole Engineering, INC.



GEOLOGIC PROFILE - C
SCALE: 1"=20' HORIZ.
1"=5' VERT.



GEOLOGIC PROFILE - D
SCALE: 1"=20' HORIZ.
1"=5' VERT.

LEGEND

B-16-4 (MW)	BORING NUMBER PIEZOMETER INSTALLED
	APPROXIMATE EXISTING GROUND SURFACE
7'	STRATA CHANGE
SILT	STRATA DEFINITION
BOE	BOTTOM OF EXPLORATION

NOTES:

1. THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTION WERE GENERALIZED FROM AND INTERPOLATED BETWEEN EXPLORATION LOCATIONS. THE TRANSITION BETWEEN MATERIALS MAY BE MORE OR LESS GRADUAL THAN INDICATED. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE SPECIFIC LOCATIONS INDICATED AND AT THE TIME OF EXPLORATION. SEE BORING LOGS FOR MORE DETAILED INFORMATION.

NO.	DATE	DESCRIPTION	BY
0	01/12/2017	PRELIMINARY FINDINGS SUBMISSION	CEM

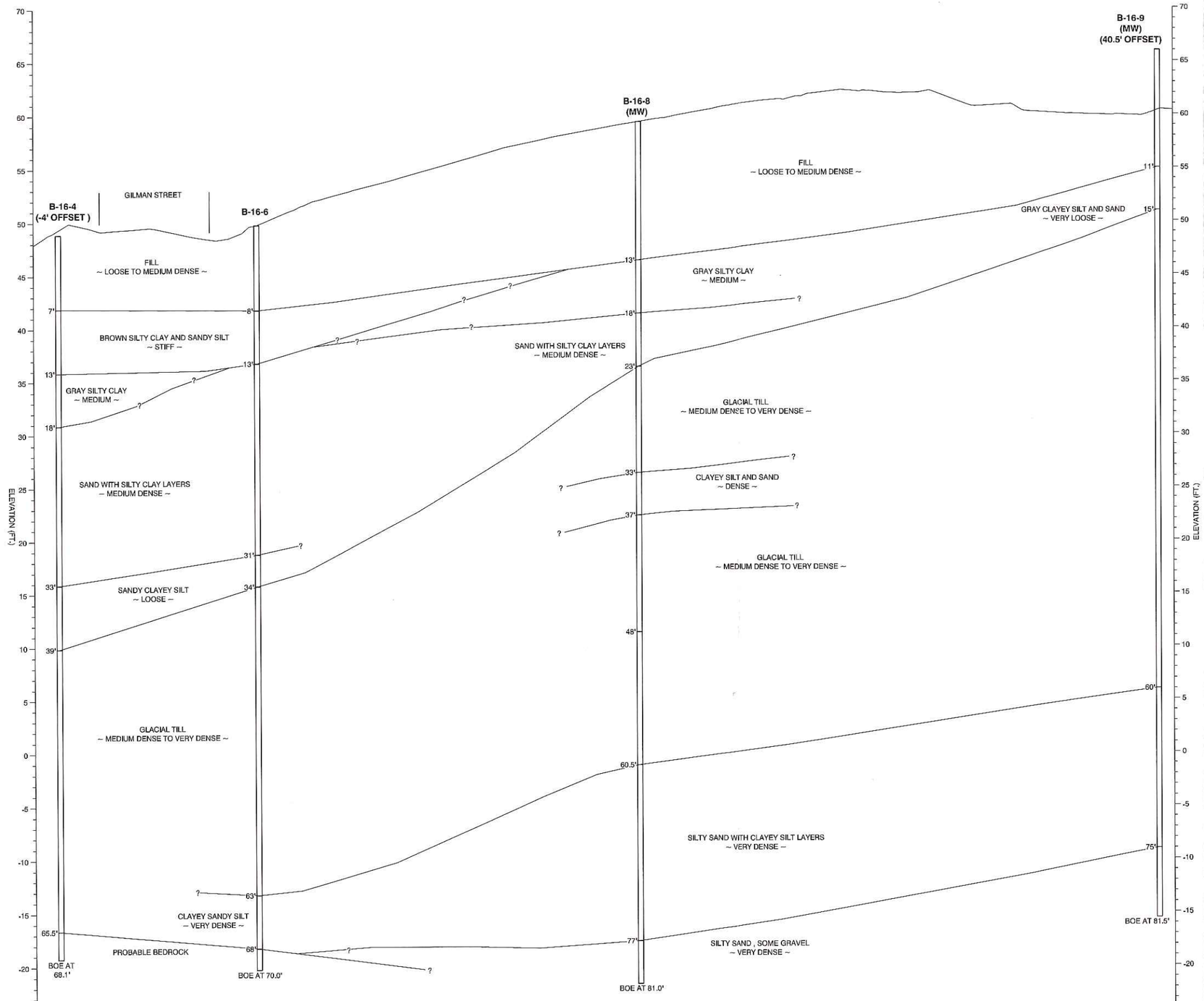
S.W.COLE ENGINEERING, INC.

MAINE MEDICAL CENTER

GEOLOGIC PROFILES C & D

PROPOSED PARKING GARAGE AND
CONGRESS STREET BUILDING
GILMAN AND CONGRESS STREETS
PORTLAND, MAINE

Job No.: 16-1136 Scale: 1" = 20'
Date: 01/12/2017 Sheet: 1.2



GEOLOGIC PROFILE - E
SCALE: 1"=20' HORIZ.
1"=5' VERT.

LEGEND

B-16-4 (MW)	BORING NUMBER PIEZOMETER INSTALLED
	APPROXIMATE EXISTING GROUND SURFACE
7'	STRATA CHANGE
SILT	STRATA DEFINITION
BOE	BOTTOM OF EXPLORATION

NOTES:

1. THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTION WERE GENERALIZED FROM AND INTERPOLATED BETWEEN EXPLORATION LOCATIONS. THE TRANSITION BETWEEN MATERIALS MAY BE MORE OR LESS GRADUAL THAN INDICATED. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE SPECIFIC LOCATIONS INDICATED AND AT THE TIME OF EXPLORATION. SEE BORING LOGS FOR MORE DETAILED INFORMATION.

NO.	DATE	DESCRIPTION	BY
0	02/20/2017	PRELIMINARY FINDINGS SUBMISSION	CEM

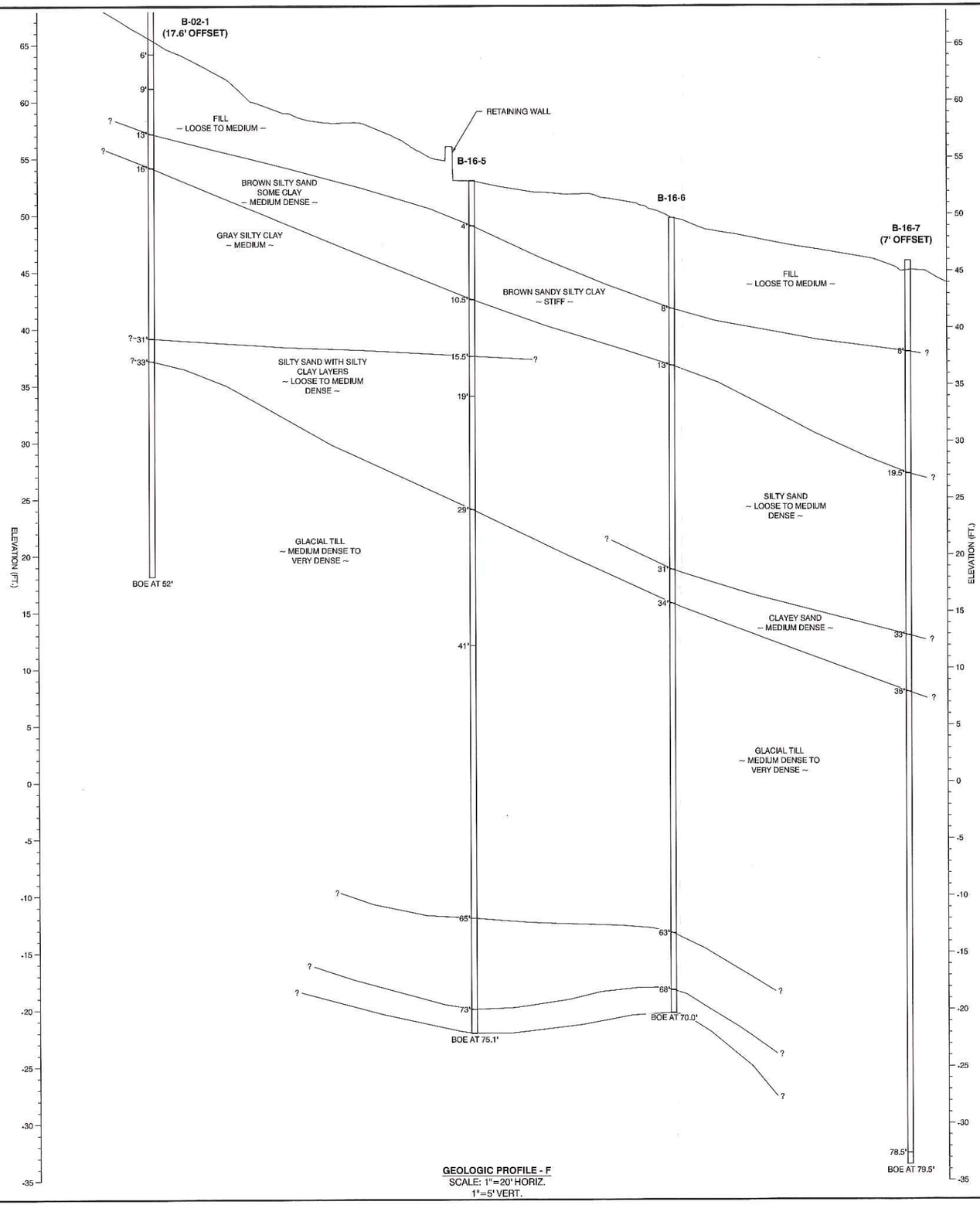
S.W.COLE ENGINEERING, INC.

MAINE MEDICAL CENTER

GEOLOGIC PROFILE E

PROPOSED PARKING GARAGE AND
CONGRESS STREET BUILDING
GILMAN AND CONGRESS STREETS
PORTLAND, MAINE

Job No.: 16-1136 Scale: 1" = 20'
Date : 02/20/2017 Sheet: 1.3



GEOLOGIC PROFILE - F
SCALE: 1"=20' HORIZ.
1"=5' VERT.

LEGEND

B-16-4 (MW)	BORING NUMBER PIEZOMETER INSTALLED
	APPROXIMATE EXISTING GROUND SURFACE
7'	STRATA CHANGE
SILT	STRATA DEFINITION
BOE	BOTTOM OF EXPLORATION

NOTES:

1. THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTION WERE GENERALIZED FROM AND INTERPOLATED BETWEEN EXPLORATION LOCATIONS. THE TRANSITION BETWEEN MATERIALS MAY BE MORE OR LESS GRADUAL THAN INDICATED. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE SPECIFIC LOCATIONS INDICATED AND AT THE TIME OF EXPLORATION. SEE BORING LOGS FOR MORE DETAILED INFORMATION.

NO.	DATE	DESCRIPTION	BY
0	02/20/2017	PRELIMINARY FINDINGS SUBMISSION	CEM

S.W.COLE ENGINEERING, INC.

MAINE MEDICAL CENTER

GEOLOGIC PROFILE F

PROPOSED PARKING GARAGE AND
CONGRESS STREET BUILDING
GILMAN AND CONGRESS STREETS
PORTLAND, MAINE

Job No.: 16-1136 Scale: 1" = 20'
Date: 02/20/2017 Sheet: 1.4

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-1**
SHEET: 2 OF 2
PROJECT NO.: 16-1136
DATE START: 11/21/2016
DATE FINISH: 11/21/2016
ELEVATION: 44' +/-
SWC REP.: PJO

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: KEVIN HANSCOM

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 10'
FREE WATER AT 4.3' PRIOR TO CASING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
	7D	24"	17"	42.0'	9	16	28	25		GRAY GRAVELLY SAND AND SILT (GLACIAL TILL) w = 10.7% ...DENSE~
	8D	24"	8"	47.0'	16	18	19	36		
	9D	24"	14"	52.0'	14	24	29	33		~VERY DENSE~
	10D	17"	12"	56.4'	23	46	52/5"			
	11D	24"	20"	61.9'	37	44	52	51/5"		GRAY GRAVELLY SAND AND SILT (GLACIAL TILL) w = 7.3%
	12D	15"	12"	66.2'	24	47	50/3"			
	13D	22"	20"	71.8'	26	28	34	52/4"		GRAY SILT AND SAND, TRACE GRAVEL (GLACIAL TILL) w = 15.9%
									73.3'	
									75.0'	ADVANCED BY ROLLER CONE (PROBABLE BEDROCK)
										BOTTOM OF EXPLORATION AT 75.0'

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-1**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-2**
SHEET: 1 OF 2
PROJECT NO.: 16-1136
DATE START: 11/22/2016
DATE FINISH: 11/23/2016
ELEVATION: 39' +/-
SWC REP.: PJO

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: KEVIN HANSCOM

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER AT 22.5' IN PIEZO ON 12/11/2016
WATER AT 22.3' IN PIEZO ON 1/4/2016

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA										2 ¾" ASPHALT / PARKING LOT
									1.5'	BROWN GRAVELY SAND, SOME SILT (FILL) ~MEDIUM DENSE~
	1D	24"	15"	2.6'	8	7	3	2		~LOOSE~
									4.0'	GRAY SILTY SAND (FILL) PETROLEUM ODOR / PID = 3,050 PPM
	2D	24"	20"	4.6'	4	4	4	4	5.0'	GRAY-BROWN CLAYEY SANDY SILT (REWORKED / FILL) ~LOOSE~
										~VERY STIFF~
	3D	24"	22"	7.0'	6	5	8	9		BROWN SILTY CLAY q_p = 6.5 to 8 ksf
										w = 26.8%
4" HW										~STIFF~
	4D	24"	22"	12.0'	2	3	4	3		WITH OCCASIONAL SAND SEAMS, q_p = 3 to 4 ksf
									13.0'	
OPEN										~MEDIUM~
HOLE	5D	24"	14"	17.0'	W O H	1	2	3		GRAY SILTY CLAY
TO 40'										w = 36.6% q_p = < 0.5 ksf
THEN									18.0'	
4" HW										~MEDIUM DENSE~
TO 30'										BROWN SILTY SAND
	6D	24"	14"	22.0'	6	5	8	9		
									24.0'	
										~MEDIUM DENSE~
	7D	24"	17"	27.0'	3	8	11	10		RUST BROWN - BROWN SILTY SAND
										WITH GRAY SILTY CLAY LAYERS
									31.0'	
	8D	24"	20"	32.0'	1	9	8	9		~MEDIUM DENSE~
OPEN										
HOLE										DARK GRAY SILT AND SAND, SOME GRAVEL (GLACIAL TILL)
										OCCASIONAL COBBLES
	9D	24"	18"	37.0'	7	10	13	18		

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS: BOTTOM OF PIEZO AT 22.6'± WITH 5' SCREEN

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-2**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-2**
SHEET: 2 OF 2
PROJECT NO.: 16-1136
DATE START: 11/22/2016
DATE FINISH: 11/23/2016
ELEVATION: 39' +/-
SWC REP.: PJO

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: KEVIN HANSCOM

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER AT 22.5' IN PIEZO ON 12/11 AND 1/4/2016
WATER AT 22.3' IN PIEZO ON 1/4/2016

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										~DENSE~
	10D	24"	18"	42.0'	7	11	21	27		DARK GRAY SAND AND SILT, SOME GRAVEL, TRACE CLAY (GLACIAL TILL)
										w = 10.9%
	11D	24"	1"	47.0'	7	8	9	6		~MEDIUM DENSE~
	12D	24"	22"	52.0'	7	9	11	24		~MORE SILTY AND CLAYEY~
	13D	11"	11"	55.9'	41	74/5"				~VERY DENSE~
									57.0'	
	14D	11"	11"	60.9'	28	60/5"				~VERY DENSE~ GRAY SILT AND SAND, SOME CLAY, TRACE GRAVEL (GLACIAL TILL) w = 39.6%
	15D	5"	5"	65.4'	50/5"					~MORE SAND~
									68.0'	
	16D	4"	4"	70.3'	50/4"				70.3'	~VERY DENSE~ GRAY GRAVELLY SAND AND SILT, SOME CLAY (GLACIAL TILL)
									73.5'	ADVANCED BY ROLLER CONE (PROBABLE BEDROCK)
										BOTTOM OF EXPLORATION AT 73.5'

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS: BOTTOM OF PIEZO AT 22.6'± WITH 5' SCREEN

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-2**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-3**
SHEET: 1 OF 2
PROJECT NO.: 16-1136
DATE START: 11/30/2016
DATE FINISH: 11/30/2016
ELEVATION: 60' +/-
SWC REP.: PFK

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: SCOTT HOLLABOUGH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 10'±
WATER AT 35.3' IN PIEZO ON 12/11 AND 1/5/2016

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										3" ASPHALT / PARKING LOT
									2.0'	DARK BROWN SILTY SAND, SOME GRAVEL (FILL) ~MEDIUM DENSE~
	1D	24"	14"	2.3'	4	4	7	5		~LOOSE~
										LIGHT BROWN GRAVELLY SAND, SOME SILT (FILL)
	2D	24"	10"	4.3'	4	5	3	4	5.0'	
										~MEDIUM DENSE~
	3D	24"	20"	6.3'	3	4	6	4		BROWN CLAYEY SILTY FINE SAND, SOME GRAVEL (PROBABLE FILL)
										w = 29.2%
	4D	24"	18"	12.0'	2	6	4	2	11.5'	
										BROWN SANDY SILTY CLAY
									14.0'	~MEDIUM TO STIFF~
	5D	24"	24"	16.0'	W O R / 24"					GRAY SILTY CLAY q_p = ≤ 0.5 ksf
										~MEDIUM~
										w = 40.6%
										W_L = 48
										W_P = 20
	1S	24"	24"	21.0'	3" SHELBY TUBE					
	1V			22.7'	3 5/8" X 6" VANE					S_v = 1.00 ksf / 0.13 ksf
	1V'			23.4'	3 5/8" X 6" VANE					S_v = 0.99 ksf / 0.16 ksf
	6D	24"	24"	26.0'	W O H / 18"			2	25.5'	w = 36.9%
										PROBABLE GRAY SILTY CLAY WITH SAND LAYERS
	2V			29.7'	3 5/8" X 6" VANE					S_v = ≥ 1.00 ksf
										(NO ROTATION)
									33.0'	
	7D	24"	15"	36.0'	8	11	14	19		~MEDIUM DENSE~
										LIGHT BROWN SAND, SOME SILT
									38.0'	
										GRAY SAND AND SILT, SOME CLAY, TRACE GRAVEL (GLACIAL TILL)
										OCCASIONAL COBBLES

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS: BOTTOM OF PIEZO AT 36.7'± WITH 5' SCREEN

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-3**

DRAFT

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-3**
SHEET: 2 OF 2
PROJECT NO.: 16-1136
DATE START: 11/30/2016
DATE FINISH: 11/30/2016
ELEVATION: 60' +/-
SWC REP.: PFK

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: SCOTT HOLLABOUGH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 10'±
WATER AT 35.3' IN PIEZO ON 12/11 AND 1/5/2016

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
	8D	24"	16"	41.0'	9	12	12	12		~MEDIUM DENSE~
	9D	24"	21"	46.0'	5	12	8	9		
	10D	24"	22"	51.0'	12	14	11	13		GRAY SAND AND SILT, SOME CLAY, SOME GRAVEL (GLACIAL TILL) w = 12.1%
	11D	24"	16"	56.0'	11	13	19	26		
	12D	24"	10"	61.0'	45	19	49	50/5"		~VERY DENSE~ ...MORE GRAVEL...
	13D	23"	15"	65.9'	24	35	46	50/5"		
	14D	11"	8"	69.9'	43	50/5"			71.0'	
	15D	3"	3"	74.3'	50/3"				74.3'	~VERY DENSE~ PROBABLE GLACIAL TILL AND WEATHERED ROCK
										ADVANCED BY ROLLER CONE (PROBABLE BEDROCK)
	16D	1"	0"	79.1'	50/1"				79.1'	BOTTOM OF EXPLORATION AT 79.1'

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS: BOTTOM OF PIEZO AT 36.7'± WITH 5' SCREEN

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-3**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-4**
SHEET: 1 OF 2
PROJECT NO.: 16-1136
DATE START: 11/30/2016
DATE FINISH: 12/1/2016
ELEVATION: 49' +/-
SWC REP.: PJO

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: SCOTT HOLLABOUGH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	H S A	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS WET AT 4.5' ±
FREE WATER AT 20' ± ON 12/2/16

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24
H S A								
	1D	24"	15"	2.4'	6	4	3	2
	2D	24"	4"	4.4'	3	3	3	2
	3D	24"	18"	6.4'	4	6	7	5
4" HW	4D	24"	20"	11.0'	3	4	5	5
OPEN HOLE TO 50' THEN 4" HW TO 44'	5D	24"	22"	16.0'	2	2	2	3
	6D	24"	12"	21.0'	12	7	12	13
	7D	24"	12"	26.0'	6	12	11	9
	8D	24"	10"	31.0'	7	5	6	14
	9D	24"	2"	36.0'	2	2	5	5

DEPTH	STRATA & TEST DATA
	3"± ASPHALT / PARKING LOT
1.0'	BROWN GRAVELLY SAND, SOME SILT (FILL) ~LOOSE~
2.1'	BROWN SAND, SOME SILT (FILL) ~LOOSE~
4.5'	DARK BROWN SAND AND SILT (FILL) ~LOOSE~
5.5'	BROWN SAND, SOME SILT (FILL) ~LOOSE TO MEDIUM DENSE~
7.0'	~MEDIUM DENSE~ BROWN SANDY CLAYEY SILT, TRACE GRAVEL (FILL)
13.0'	~STIFF~ BROWN SILTY CLAY WITH FREQUENT SAND SEAMS q_p = 4 to 5 ksf
18.0'	~MEDIUM~ GRAY-BROWN SILTY CLAY WITH OCCASIONAL SAND SEAMS q_p = 1 to 2 ksf
29.0'	~MEDIUM DENSE~ BROWN SAND, SOME SILT WITH OCCASIONAL GRAY CLAYEY SILT SEAMS SOME GRAVEL BELOW 25'
33.0'	~MEDIUM DENSE~ RUST BROWN-BROWN SAND WITH GRAY CLAYEY SILT LAYERS
39.0'	~LOOSE~ GRAY-BROWN SANDY CLAYEY SILT
	DARK GRAY SILT AND SAND, TRACE GRAVEL (GLACIAL TILL)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-4**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-4**
SHEET: 2 OF 2
PROJECT NO.: 16-1136
DATE START: 11/30/2016
DATE FINISH: 12/1/2016
ELEVATION: 49' +/-
SWC REP.: PJO

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: JEFF LEE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	H S A	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS WET AT 4.5' ±
FREE WATER AT 20' ± ON 12/2/16

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
	10D	24"	18"	41.0'	4	5	6	9		~MEDIUM DENSE~ GRAY SILT AND SAND, SOME CLAY, TRACE GRAVEL (GLACIAL TILL) OCCASIONAL COBBLES
	11D	24"	16"	47.0'	12	12	19	18		~DENSE~ ...MORE GRAVEL...
	12D	17"	17"	51.4'	46	45	50/5"			~VERY DENSE~
	13D	18"	18"	56.5'	25	34	50			
	14D	22"	20"	61.8'	17	22	38	50/4"		
	15D	2"	2"	65.2'	50/2"				65.5'	
	16D	1"	1"	68.1'	50/1"				68.1'	ADVANCED BY ROLLER CONE (PROBABLE BEDROCK)
										BOTTOM OF EXPLORATION AT 68.1'

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-4**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-5**
SHEET: 1 OF 2
PROJECT NO.: 16-1136
DATE START: 12/1/2016
DATE FINISH: 12/2/2016
ELEVATION: 53' +/-
SWC REP.: PJO

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: JEFF LEE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
FREE WATER AT 4.5' DURING DRILLING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
SSA									0.5'	6"± CONCRETE
	1D	24"	12"	2.5'	4	6	5	5		~MEDIUM DENSE~ BROWN GRAVELLY SAND, SOME SILT (FILL)
									4.0'	
	2D	24"	22"	7.0'	3	3	3	5		~STIFF~ BROWN SILTY CLAY WITH FREQUENT FINE SAND SEAMS q_p = 3 to 4 ksf
									10.5'	~MEDIUM~ q_p = 1.5 ksf
	3D	24"	22"	12.0'	2	1	2	3		~MEDIUM~ q_p = < 0.5 ksf GRAY SILTY CLAY WITH FREQUENT SAND SEAMS / LAYERS
4" HW									15.5'	
	4D	24"	23"	17.0'	2	3	6	6		~LOOSE~ BROWN SILTY SAND WITH GRAY CLAYEY SILT LAYERS
									19.0'	
	5D	24"	12"	22.0'	12	11	10	14		~MEDIUM DENSE~ RUST BROWN-BROWN FINE SAND, WITH CLAYEY SILT LAYERS
									25.0'	
	6D	24"	11"	27.0'	12	14	16	18		~MEDIUM DENSE~ w = 13.6% LIGHT BROWN SAND, SOME SILT
									29.0'	
	7D	24"	16"	32.0'	10	8	7	9		~MEDIUM DENSE~ GRAY CLAYEY SILTY SAND, SOME GRAVEL (GLACIAL TILL) OCCASIONAL COBBLES
	8D	24"	1"	37.0'	13	14	20	22		~DENSE~

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-5**

DRAFT

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-5**
SHEET: 2 OF 2
PROJECT NO.: 16-1136
DATE START: 12/1/2016
DATE FINISH: 12/2/2016
ELEVATION: 53' +/-
SWC REP.: PJO

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC
DRILLER: JEFF LEE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
FREE WATER AT 4.5' DURING DRILLING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									41.0'	
	9D	24"	14"	42.0'	13	12	56	35		~VERY DENSE~
	10D	8"	6"	45.6'	33	50/2"				DARK GRAY SAND AND SILT, SOME GRAVEL (GLACIAL TILL) OCCASIONAL COBBLES w = 9.9%
	11D	24"	24"	52.0'	21	27	35	48		
	12D	24"	22"	57.0'	23	38	38	55		~VERY DENSE~
	13D	18"	17"	61.5'	36	33	50			w = 8.6%
									65.0'	
	14D	24"	20"	67.0'	26	30	23	63		~VERY DENSE~ w = 28.4% DARK GRAY CLAYEY SILT, SOME SAND
	15D	2"	2"	70.1'	50/2"				73.0'	
									75.1'	ADVANCED BY ROLLER CONE (PROBABLE BEDROCK)
										BOTTOM OF EXPLORATION AT 75.1'

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-5**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-6**
SHEET: 1 OF 2
PROJECT NO.: 16-1136
DATE START: 12/5/2016
DATE FINISH: 12/5/2016
ELEVATION: 50' +/-
SWC REP.: PFK

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: SCOTT HOLLABOUGH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	H S A	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 30'±
FREE WATER AT 18' WHEN CASING PULLED

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
H S A									1.0'	BARK MULCH AND TOPSOIL
	1D	24"	20"	2.0'	1	12	12	9		~MEDIUM DENSE~ BROWN SILTY SAND WITH SOME GRAVEL (FILL) NOTE: HIT PROBABLE CONCRETE AT 4', MOVED BORING 5' WEST
									5.0'	
	2D	24"	24"	7.0'	2	3	4	4		~STIFF TO ~VERY STIFF~ q_p = 4 to 6 ksf BROWN SILTY CLAY (DISTURBED/FILL)
									8.0'	
4" HW										~STIFF~ BROWN SILTY CLAY WITH SAND LAYERS w = 34.1%
	3D	24"	24"	12.0'	3	3	3	5	13.0'	
	4D	24"	16"	17.0'	6	9	9	12		~MEDIUM DENSE~ LIGHT BROWN SAND, TRACE SILT w = 6.2%
									18.0'	
	5D	24"	12"	22.0'	13	12	14	15		~MEDIUM DENSE~ BROWN SILTY SAND WITH GRAY CLAYEY SILT LAYERS
	6D	24"	15"	27.0'	5	9	10	7		
									31.0'	
	7D	24"	24"	32.0'	2	1	1	4		~VERY LOOSE~ GRAY CLAYEY SILTY SAND
									34.0'	
OPEN HOLE	8D	24"	14"	37.0'	8	12	10	14		~MEDIUM DENSE~ DARK GRAY SAND AND SILT, SOME CLAY, SOME GRAVEL (GLACIAL TILL) OCCASIONAL COBBLES w = 13.3%

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-6**

DRAFT

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-6**
SHEET: 2 OF 2
PROJECT NO.: 16-1136
DATE START: 12/5/2016
DATE FINISH: 12/5/2016
ELEVATION: 50' +/-
SWC REP.: PFK

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: SCOTT HOLLABOUGH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	H S A	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 30'±
FREE WATER AT 18' WHEN CASING PULLED

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
	9D	24"	24"	42.0'	15	17	45	50/5"		~VERY DENSE~
	10D	15"	12"	46.2'	22	43	50/3"			w = 10.3% GRAY SAND AND SILT, TRACE GRAVEL (GLACIAL TILL) OCCASIONAL COBBLES
	11D	23"	20"	51.9'	18	33	33	50/5"		
	12D	5"	5"	55.4'	50/5"					
	13D	10"	6"	60.8'	53	50/4"				... MORE SANDY...
									63.0'	
	14D	22"	20"	66.8'	25	23	25	50/4"		~VERY DENSE~ DARK GRAY SANDY CLAYEY SILT
									68.0'	
	15D	0"	0"	70.0'	25/0"				70.0'	ADVANCED BY ROLLER CONE (PROBABLE BEDROCK)
										BOTTOM OF EXPLORATION AT 70.0'

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-6**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-7**
SHEET: 1 OF 2
PROJECT NO.: 16-1136
DATE START: 12/7/2016
DATE FINISH: 12/8/2016
ELEVATION: 46' +/-
SWC REP.: PFK

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: SCOTT HOLLABOUGH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	H S A	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED AT 34.5'± DURING DRILLING

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
H S A										DARK BROWN SILTY SAND, SOME GRAVEL, ORGANICS (FILL)
	1D	24"	10"	2.0'	2	4	5	5		~LOOSE~
									3.0'	
										~MEDIUM DENSE~
										BROWN SILTY SAND (FILL)
	2D	24"	16"	7.0'	11	10	13	19		
									8.0'	
										~STIFF~
4" HW	3D	24"	22"	10.5'	3	4	4	4		BROWN SILTY CLAY q_p = 2 ksf
	4D	24"	24"	15.5'	2	3	4	5		...FREQUENT SAND SEAMS...
									19.5'	
	5D	24"	24"	20.5'	3	4	5	6		~LOOSE BECOMING...
										RUST BROWN SAND, SOME SILT
	6D	24"	18"	25.5'	10	11	13	13		...MEDIUM DENSE~
	7D	24"	20"	31.5'	13	13	17	20		
									33.0'	
										~MEDIUM DENSE~
										GRAY-BROWN CLAYEY SAND
										WITH CLAYEY SILT LAYERS
	8D	24"	22"	36.5'	3	7	5	4		
									38.0'	
										BROWN SAND AND SILT, SOME GRAVEL (GLACIAL TILL)

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-7**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-7**
SHEET: 2 OF 2
PROJECT NO.: 16-1136
DATE START: 12/7/2016
DATE FINISH: 12/8/2016
ELEVATION: 46' +/-
SWC REP.: PFK / TSD

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC
DRILLER: SCOTT HOLLABOUGH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	H S A	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS SATURATED BELOW 38.5'

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
	9D	18"	12"	40.5'	20	33	50/6"			BROWN SAND AND SILT, SOME GRAVEL (GLACIAL TILL) OCCASIONAL COBBLES
	10D	11"	4"	44.4'	37	50/5"				~VERY DENSE~
	11D	23"	18"	50.4'	40	43	42	50/5"		
	12D	12"	12"	54.5'	39	50				
	13D	10"	8"	59.4'	42	50/4"				
	14D	5"	4"	68.9'	50/5"					~VERY DENSE~ GRAY-BROWN SILTY SAND, TRACE GRAVEL (GLACIAL TILL)
									78.5'	
									79.5'	DARK GRAY SILT AND SAND, TRACE GRAVEL (GLACIAL TILL) ~VERY DENSE~
	15D	12"	8"	79.5'	37	50/6"				BOTTOM OF EXPLORATION AT 79.5'

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[ ] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-7**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-8**
SHEET: 1 OF 2
PROJECT NO.: 16-1136
DATE START: 12/6/2016
DATE FINISH: 12/6/2016
ELEVATION: 59' +/-
SWC REP.: PFK

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: SCOTT HOLLABOUGH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	H S A	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER AT 20.7' IN PIEZO ON 12/11/2016
WATER AT 14' IN PIEZO ON 1/4/2016

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
H S A										BARK MULCH AND TOPSOIL (FILL)
	1D	24"	8"	2.0'	4	4	7	8	1.5'	
	2D	24"	15"	7.0'	3	3	4	5		BROWN-GRAY CLAYEY SILT AND SANDY SILTY CLAY (MIXED FILL) ~LOOSE~
4" HW	3D	24"	14"	11.0'	3	2	3	3	13.0'	
	4D	24"	24"	16.0'	W O H / 12"		1	1	18.0'	~MEDIUM~ GRAY SILTY CLAY WITH SAND SEAMS w = 39.7%
	5D	24"	16"	21.0'	5	7	9	8	23.0'	~MEDIUM DENSE~ RUST BROWN-BROWN SILTY SAND WITH CLAYEY SILT LAYERS w = 23.8%
OPEN HOLE	6D	24"	10"	26.0'	8	6	5	7		~MEDIUM DENSE~ GRAY SAND AND SILT, SOME CLAY (GLACIAL TILL) OCCASIONAL COBBLES w = 13.4%
	7D	24"	22"	31.0'	10	13	13	18	33.0'	
	8D	24"	13"	36.0'	17	16	21	24	37.0'	~DENSE~ BROWN CLAYEY SILT AND SAND
										BROWN SAND AND SILT, SOME GRAVEL (GLACIAL TILL) OCCASIONAL COBBLES

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS: BOTTOM OF PIEZO AT 38'± WITH 5' SCREEN

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-8**

DRAFT

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-8**
SHEET: 2 OF 2
PROJECT NO.: 16-1136
DATE START: 12/6/2016
DATE FINISH: 12/6/2016
ELEVATION: 59' +/-
SWC REP.: PFK

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: SCOTT HOLLABOUGH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	H S A	2 1/4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER AT 20.7' IN PIEZO ON 12/11/2016
WATER AT 14' IN PIEZO ON 1/4/2016

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
	9D	24"	16"	41.0'	20	16	15	24		~DENSE~ BROWN SAND AND SILT, SOME GRAVEL (GLACIAL TILL) OCCASIONAL COBBLES w = 13.3%
	10D	24"	14"	46.0'	11	12	12	9	48.0'	
	11D	17"	16"	51.0'	28	37	50/5"			~VERY DENSE~ GRAY SAND AND SILT, SOME CLAY, SOME GRAVEL (GLACIAL TILL) OCCASIONAL COBBLES
	12D	11"	8"	54.9'	54	50/5"				w = 8.5%
	13D	22"	18"	60.8'	17	27	31	50/4"	60.5'	
	14D	10"	9"	64.8'	32	50/4"				~VERY DENSE~ BROWN-GRAY SILTY SAND WITH CLAYEY SILT LAYERS
	15D	16"	12"	70.3'	47	58	50/4"			...SOME GRAVEL...
									77.0'	
	16D	6"	6"	79.5'	77				81.0'	~VERY DENSE~ GRAY SILTY SAND, SOME GRAVEL BOTTOM OF EXPLORATION AT 81'

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS: BOTTOM OF PIEZO AT 38'± WITH 5' SCREEN

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-8**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-9**
SHEET: 1 OF 2
PROJECT NO.: 16-1136
DATE START: 12/9/2016
DATE FINISH: 12/9/2016
ELEVATION: 66' +/-
SWC REP.: PFK

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: SCOTT HOLLABOUGH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER AT 35.1' IN PIEZO ON 12/11/2016
WATER AT 30.9' IN PIEZO ON 1/4/2016

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
4" HW									0.5'	6" CONCRETE
	1D	24"	14"	2.5'	9	7	5	5		~MEDIUM DENSE~ BROWN SAND, SOME GRAVEL, SOME SILT (FILL)
	2D	24"	24"	7.0'	7	6	6	7		
	3D	24"	8"	9.0'	5	3	2	2		~LOOSE~
OPEN HOLE	4D	24"	10"	11.5'	1	1	2	3	11.0'	~VERY LOOSE~ DARK GRAY CLAYEY SAND AND SILT
	5D	24"	14"	16.5'	8	12	25	24	15.0'	~DENSE~ DARK GRAY SAND AND SILT, SOME GRAVEL, TRACE CLAY (GLACIAL TILL) OCCASIONAL COBBLES
	6D	24"	16"	21.5'	8	12	25	24		w = 9.1%
	7D	24"	20"	26.5'	12	14	19	19	30.0'	
	8D	24"	10"	31.5'	9	12	14	20		~MEDIUM DENSE~ GRAY SAND AND SILT, SOME CLAY, TRACE GRAVEL (GLACIAL TILL) OCCASIONAL COBBLES
	9D	24"	24"	36.5'	15	12	10	15		

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS: BOTTOM OF PIEZO AT 39'± WITH 5' SCREEN

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-9**

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16-9**
SHEET: 2 OF 2
PROJECT NO.: 16-1136
DATE START: 12/9/2016
DATE FINISH: 12/9/2016
ELEVATION: 66' +/-
SWC REP.: PFK

PROJECT / CLIENT: PROPOSED GILMAN ST. GARAGE & CONGRESS ST. BUILDING / MAINE MEDICAL CENTER
LOCATION: PORTLAND, MAINE
DRILLING CO. : S.W.COLE EXPLORATIONS, LLC DRILLER: SCOTT HOLLABOUGH

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"		
SAMPLER:	SS	1 3/8"	140 LBS	30"
CORE BARREL:				

WATER LEVEL INFORMATION
WATER AT 35.1' IN PIEZO ON 12/11/2016
WATER AT 30.9' IN PIEZO ON 1/4/2016

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
	10D	24"	18"	41.5'	10	14	12	24		GRAY SAND AND SILT, SOME CLAY, TRACE GRAVEL (GLACIAL TILL) OCCASIONAL COBBLES
	11D	24"	10"	46.5'	12	17	22	26		~DENSE~ ...MORE GRAVEL...
	12D	21"	20"	51.2'	10	21	30	50/3"		~VERY DENSE~ ...SOME SAND LAYERING...
	13D	10"	8"	55.3'	54	50/4"				GRAY SILTY SAND, SOME GRAVEL (GLACIAL TILL)
									60.0'	
	14D	10"	6"	60.3'	50	50/4"				~VERY DENSE~ GRAY-BROWN SILTY SAND WITH CLAYEY SILT LAYERS
	15D	10"	8"	70.3'	60	50/4"				...SOME GRAVEL...
									75.0'	
										DARK GRAY SAND AND SILT, SOME GRAVEL, TRACE CLAY WITH PIECES OF WEATHERED ROCK (GLACIAL TILL) ~VERY DENSE~
	16D	12"	12"	80.5'	22	54			81.5'	BOTTOM OF EXPLORATION AT 81.5'

DRAFT

SAMPLES:
D = SPLIT SPOON
C = 2" SHELBY TUBE
S = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS: BOTTOM OF PIEZO AT 39'± WITH 5' SCREEN

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-16-9**

KEY TO THE NOTES & SYMBOLS
Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q_u	-	unconfined compressive strength, kips/sq. ft. - based on laboratory unconfined compressive test
S_v	-	field vane shear strength, kips/sq. ft.
L_v	-	lab vane shear strength, kips/sq. ft.
q_p	-	unconfined compressive strength, kips/sq. ft. based on pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W_L	-	liquid limit - Atterberg test
W_P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass. RQD is computed from recovered core samples.
γ_T	-	total soil weight
γ_B	-	buoyant soil weight

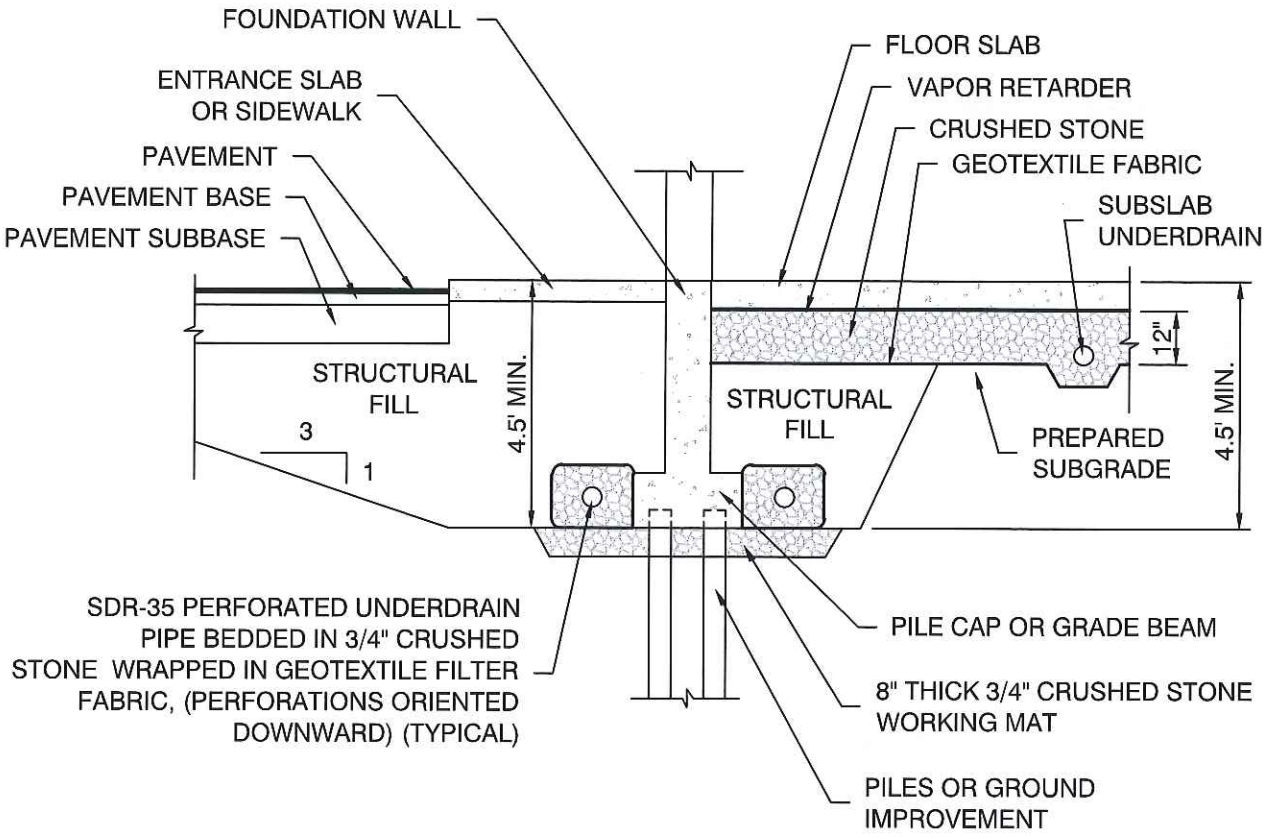
Description of Proportions:

0 to 5% TRACE
5 to 12% SOME
12 to 35% "Y"
35+% AND

REFUSAL: **Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: **Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.



NOTE:

1. UNDERDRAIN INSTALLATION AND MATERIAL GRADATION RECOMMENDATIONS ARE CONTAINED WITHIN THIS REPORT.

2. DETAIL IS PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY, NOT FOR CONSTRUCTION.

S.W.COLE ENGINEERING, INC.

MAINE MEDICAL CENTER

UNDERDRAIN DETAIL

PROPOSED CONGRESS STREET MEDICAL OFFICE BUILDING
CONGRESS STREET
PORTLAND, MAINE

Job No.:	16-1136	Scale:	Not to Scale
Date :	02/20/2017	Sheet:	21

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APPENDIX A

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: B-1
SHEET: 1 OF 2
PROJECT NO.: 02-0763 S
DATE START: 9/3/2002
DATE FINISH: 9/3/2002
ELEVATION: 68+/-
SWC REP.: KGB

PROJECT / CLIENT: PROPOSED CENTRAL UTILITIES PLANT / MAINE MEDICAL CENTER
LOCATION: GILMAN STREET PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS DRILLER: JEFF LEE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
NO GROUNDWATER OBSERVED

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
	S-1	24"	19"	2.0'	3	8	10	11	2.0'+/-	BROWN SILTY SAND, SOME GRAVEL, SOME ORGANICS (FILL) ~ MEDIUM DENSE ~
									6.0'	BROWN SILTY SAND, SOME FINE GRAVEL (FILL) ~ MEDIUM DENSE ~
	S-2	24"	20"	7.0'	7	14	16	18	9.0'	BROWN SILTY SAND, TRACE OF FINE GRAVEL (FILL) ~ MEDIUM DENSE TO DENSE ~
19										
28	S-3	24"	20"	12.0'	8	7	7	10	13.0'	LIGHT BROWN MEDIUM SAND, SOME FINE GRAVEL, TRACE OF SILT (PROBABLE FILL) ~ MEDIUM DENSE ~
48										
45									16.0'	BROWN SILTY SAND, SOME GRAVEL, TRACE OF CLAY ~ MEDIUM DENSE ~
	S-4	24"	24"	17.0'	3	1	1	1		~ MEDIUM ~
	1U	24"	24"	19.0'	HYDRAULIC PUSH					GRAY SILTY CLAY WITH SOME SAND LAYERS qu = 1.24 ksf W = 40.4% qp = 0.5 ksf WI = 38 Wp = 18
	S-5	24"	24"	22.0'	WOH/24"					
	3.5" X 6" VANE			25.8'						Sv = 1.3/0.21 ksf
	3.5" X 6" VANE			26.5'						Sv = NO ROTATION
	2U	12"	10"	31.0'	HYDRAULIC PUSH				31.0'	W = 31.0% WI = 28 qu = 2.9 ksf Wp = 17
	S-6	24"	17"	33.0'	12	8	7	18	33.0'	LIGHT BROWN FINE SAND WITH FREQUENT IRON STAINING, TRACE OF SILT AND SEAMS OF SILTY SAND, TRACE OF CLAY ~ MEDIUM DENSE ~
	S-7	24"	24"	37.0'	1	3	4	7		GRAY SILT AND SAND, SOME GRAVEL AND TRACE OF CLAY (TILL) ~ MEDIUM DENSE ~

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[X] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

2

BORING NO.: B-1

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: B-1
SHEET: 2 OF 2
PROJECT NO.: 02-0763 S
DATE START: 9/3/2002
DATE FINISH: 9/3/2002
ELEVATION: 68+/-
SWC REP.: KGB

PROJECT / CLIENT: PROPOSED CENTRAL UTILITIES PLANT / MAINE MEDICAL CENTER
LOCATION: GILMAN STREET PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS DRILLER: JEFF LEE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 1/2"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
NO GROUNDWATER OBSERVED

NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24	ELEV.	STRATA & TEST DATA
S-8	24"	14"	42.0'	5	4	8	11		- MEDIUM DENSE BECOMING . . .
S-9	24"	14"	47.0'	5	7	8	10		GRAY SILT AND SAND, SOME GRAVEL AND TRACE OF CLAY (TILL)
									. . . DENSE -
S-10	24"	21"	52.0'	7	13	15	23	52.0'	
									BOTTOM OF EXPLORATION AT 52.0'
									NOT REFUSAL
									NOTE :
									BORING MADE APROXIMATELY 15' SOUTH OF EXISTING STORM DRAI

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[X] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: B-1

B-96-15

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: B-15
SHEET: 1 OF 1
PROJECT NO.: 96-0043 S
DATE START: 1/6/1997
DATE FINISH: 1/6/1997
ELEVATION: 65.0'+/-
SWC REP.: RRJ

PROJECT / CLIENT: MEDICAL OFFICE AND PARKING GARAGE / MAINE MEDICAL CENTER
LOCATION: CONGRESS STREET PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS, INC. DRILLER: DAVE DIONNE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	4 1/4"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
OPEN HOLE TO 21.0'
WATER AT 10.3' AFTER 24 HOURS

CASING BLOWS PER FOOT	SAMPLE NO.	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.2'	DARK BROWN LOAMY SANDY SILT WITH ORGANICS (TOPSOIL)
	S-1	24"	6"	2.0'	3	4	5	8	2.0'	BROWN SILTY SAND WITH SOME GRAVEL (FILL) ~ MEDIUM DENSE ~
	S-2	24"	10"	7.0'	9	16	23	25		~ DENSE ~
	S-3	24"	18"	12.0'	20	22	25	25		GRAY GRAVELLY SILTY SAND (TILL) W = 8.5%
	S-4	24"	18"	17.0'	5	8	9	15		~ MEDIUM DENSE ~
	S-5	24"	20"	22.0'	8	8	10	13		~ DENSE ~
	S-6	24"	12"	27.0'	7	11	28	25	27.0'	
										BOTTOM OF EXPLORATION AT 27.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: B-15

B-96-16

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: B-16
SHEET: 1 OF 2
PROJECT NO.: 96-0043 S
DATE START: 1/8/1997
DATE FINISH: 1/8/1997
ELEVATION: 68.5'+/-
SWC REP.: RRJ

PROJECT / CLIENT: MEDICAL OFFICE AND PARKING GARAGE / MAINE MEDICAL CENTER
LOCATION: CONGRESS STREET PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS, INC. DRILLER: DAVE DIONNE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	4 1/4"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS APPEARED SATURATED AT 10'+/-

CASING BLOWS PER FOOT	SAMPLE NO.	PEN	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6": 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
									0.2'	ASPHALT PAVEMENT
	S-1	18"	8"	1.7'	15	9	23		2.0'	DARK BROWN GRAVELLY SAND WITH SOME SILT (FILL)
	S-2	24"	20"	7.0'	18	75	21	17		GRAY CLAYEY SAND WITH SOME SILT AND TRACE OF GRAVEL (TILL) ~ DENSE TO VERY DENSE ~
	S-3	24"	18"	12.0'	6	17	16	35		
	S-4	24"	0	17.0'	39	43	50	61		
	S-5	24"	24"	22.0'	6	16	25	27	23.0'	
									24.5'	BOULDER
	S-6	24"	10"	26.5'	11	20	33	48		GRAY SAND AND SILT WITH SOME GRAVEL (TILL) ~ VERY DENSE ~
	S-7	24"	24"	32.0'	41	33	20	32		
	S-8	24"	12"	37.0'	10	12	38	42		

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: B-16

S.W.COLE ENGINEERING, INC.

BORING LOG

BORING NO.: B-16
SHEET: 2 OF 2
PROJECT NO.: 96-0043 S
DATE START: 1/6/1997
DATE FINISH: 1/6/1997
ELEVATION: 66.5'+/-
SWC REP.: RRJ

PROJECT / CLIENT: MEDICAL OFFICE AND PARKING GARAGE / MAINE MEDICAL CENTER
LOCATION: CONGRESS STREET PORTLAND, MAINE
DRILLING FIRM: GREAT WORKS TEST BORINGS, INC. DRILLER: DAVE DIONNE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	4 1/4"		
SAMPLER:	SS	1 3/8"	140 LB	30"
CORE BARREL:				

WATER LEVEL INFORMATION
SOILS APPEARED SATURATED AT 10'+/-

CASING BLOWS PER FOOT	SAMPLE NO	PEN.	REC.	DEPTH @ BOT	SAMPLER BLOWS PER 6" 0-6	6-12	12-18	18-24	DEPTH	STRATA & TEST DATA
										GRAY SAND AND SILT WITH SOME GRAVEL (TILL)
	S-9	24"	24"	42.0'	12	16	22	31	42.0'	~ VERY DENSE ~
										BOTTOM OF EXPLORATION AT 42.0'

SAMPLES:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
[ ] DRILLER - VISUALLY
[X] SOIL TECH. - VISUALLY
[X] LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: B-16

APPENDIX B

S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name: PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING

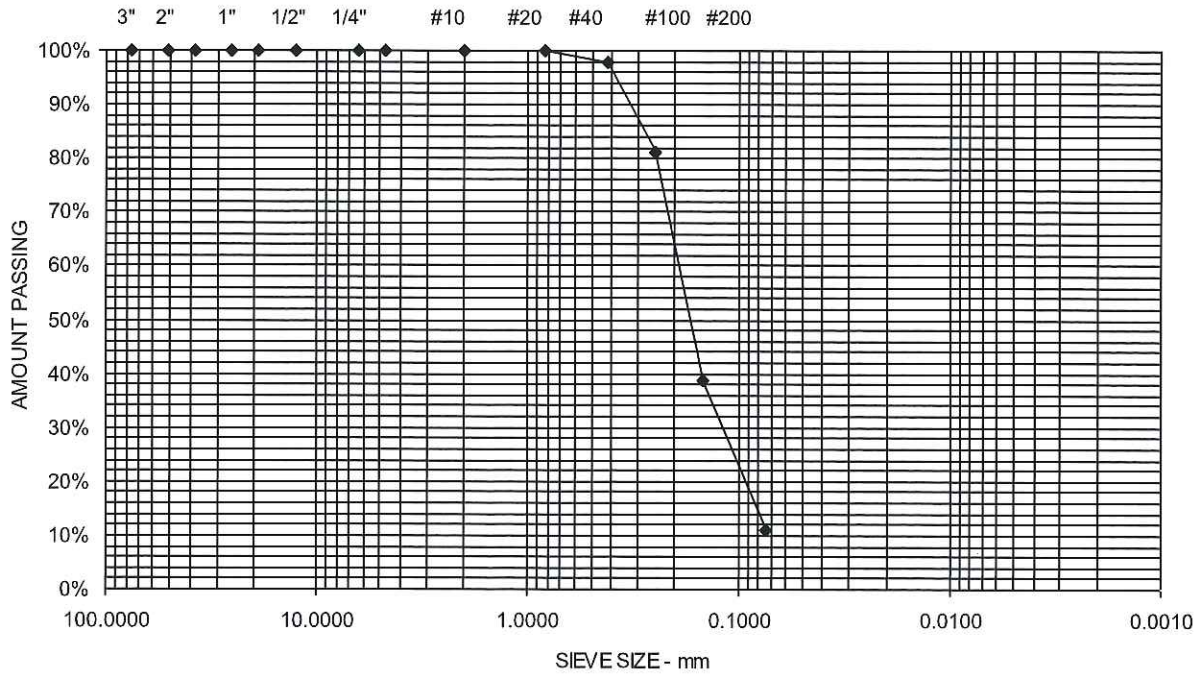
Client: MAINE MEDICAL CENTER

Material Source: **B-16-1 5D 30-32'**

Project Number: 16-1136
Lab ID: 21874G
Date Received: 11/30/2016
Date Completed: 12/5/2016
Tested By: JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**100**	0% Gravel
2.00 mm	**No. 10**	**100**	
850 um	**No. 20**	**100**	
425 um	**No. 40**	**98**	89% Sand
250 um	**No. 60**	**81**	
150 um	**No. 100**	**39**	
75 um	**No. 200**	**11.0**	11% Fines

SAND, SOME SILT



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S.W.COLE ENGINEERING, INC.

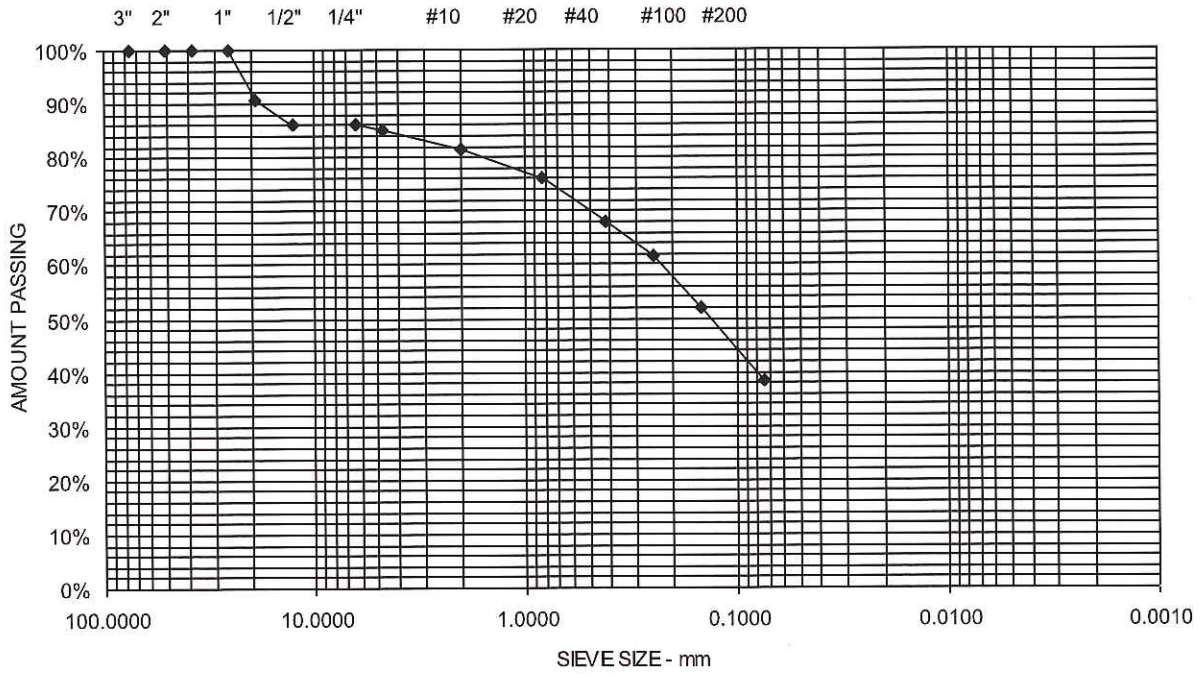
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING	Project Number	16-1136
Client	MAINE MEDICAL CENTER	Lab ID	21875G
		Date Received	11/30/2016
		Date Completed	12/5/2016
Material Source	**B-16-1 9D 40-42'**	Tested By	JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**91**	
12.5 mm	**1/2"**	**86**	
6.3 mm	**1/4"**	**86**	
4.75 mm	**No. 4**	**85**	14.8% Gravel
2.00 mm	**No. 10**	**82**	
850 um	**No. 20**	**76**	
425 um	**No. 40**	**68**	46.7% Sand
250 um	**No. 60**	**62**	
150 um	**No. 100**	**52**	
75 um	**No. 200**	**38.5**	38.5% Fines

GRAVELLY SAND AND SILT



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S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name: PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING

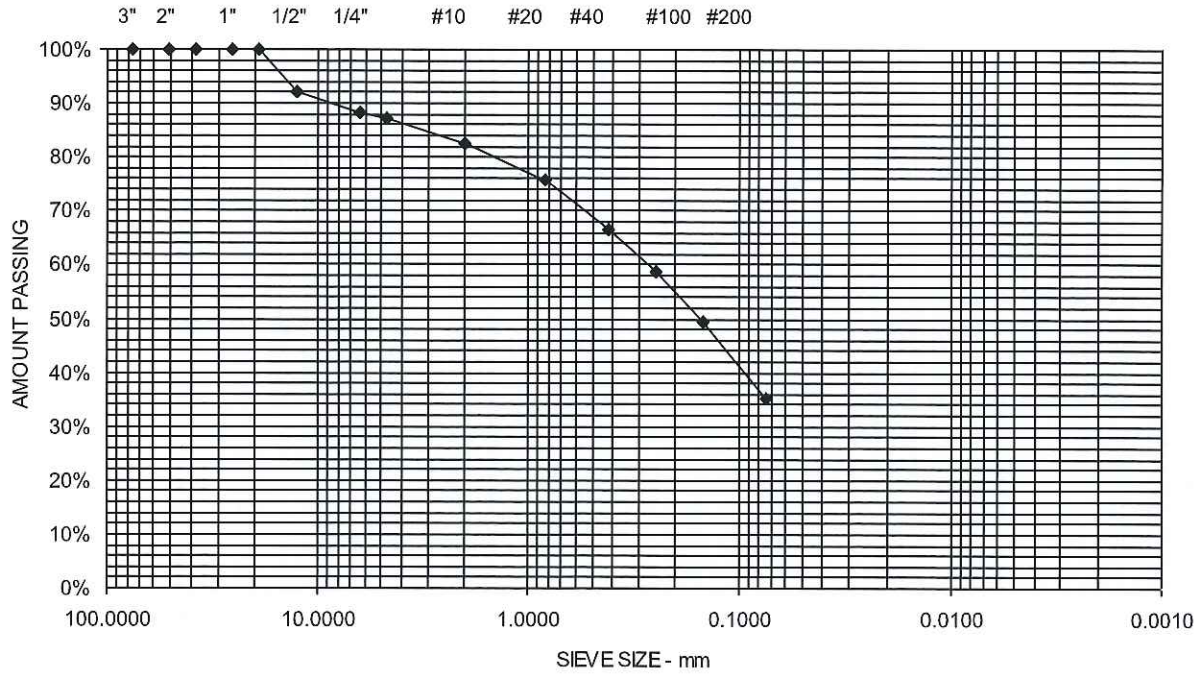
Client: MAINE MEDICAL CENTER

Material Source: **B-16-1 11D 60-61.9'**

Project Number: 16-1136
Lab ID: 21876G
Date Received: 11/30/2016
Date Completed: 12/7/2016
Tested By: JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**92**	
6.3 mm	**1/4"**	**88**	
4.75 mm	**No. 4**	**87**	12.9% Gravel
2.00 mm	**No. 10**	**82**	
850 um	**No. 20**	**76**	
425 um	**No. 40**	**67**	51.7% Sand
250 um	**No. 60**	**59**	
150 um	**No. 100**	**49**	
75 um	**No. 200**	**35.4**	35.4% Fines

GRAVELLY SAND AND SILT



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S.W.COLE ENGINEERING, INC.

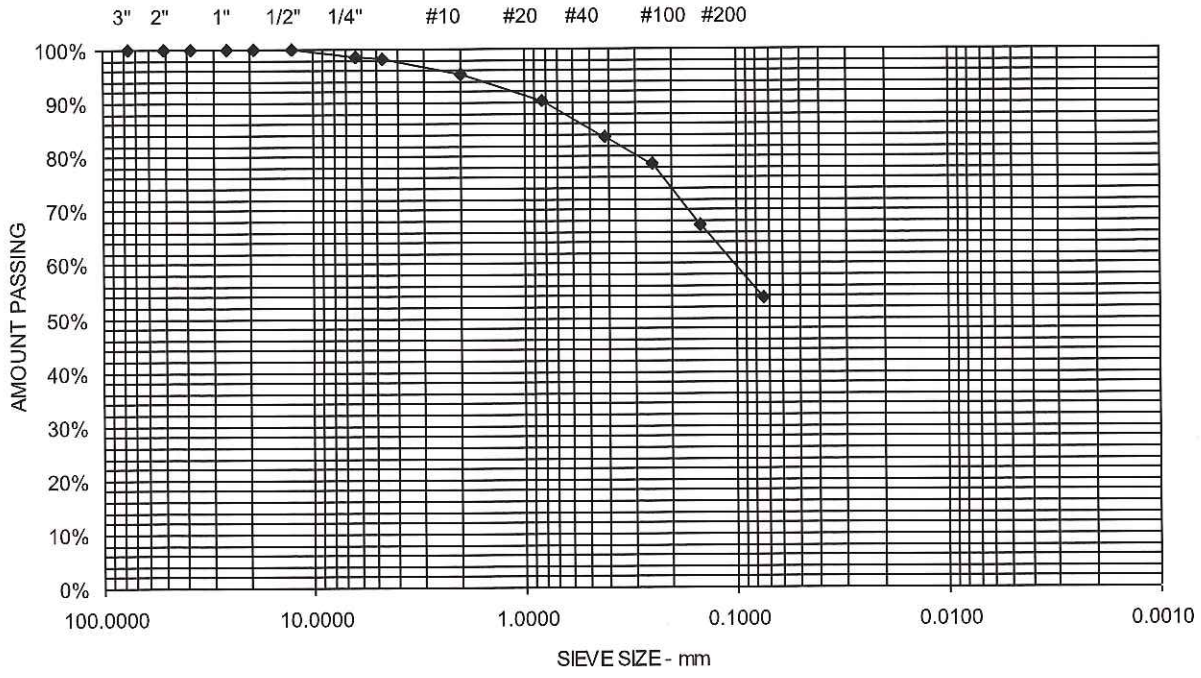
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING	Project Number	16-1136
Client	MAINE MEDICAL CENTER	Lab ID	21877G
		Date Received	11/30/2016
		Date Completed	12/7/2016
Material Source	**B-16-1 13D 70-71.8'**	Tested By	JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
6.3 mm	**1/4"**	**99**	
4.75 mm	**No. 4**	**98**	1.8% Gravel
2.00 mm	**No. 10**	**95**	
850 um	**No. 20**	**90**	
425 um	**No. 40**	**84**	44.3% Sand
250 um	**No. 60**	**79**	
150 um	**No. 100**	**67**	
75 um	**No. 200**	**53.9**	53.9% Fines

SILT AND SAND, TRACE GRAVEL



Comments: w = 15.9%

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S.W.COLE ENGINEERING, INC.

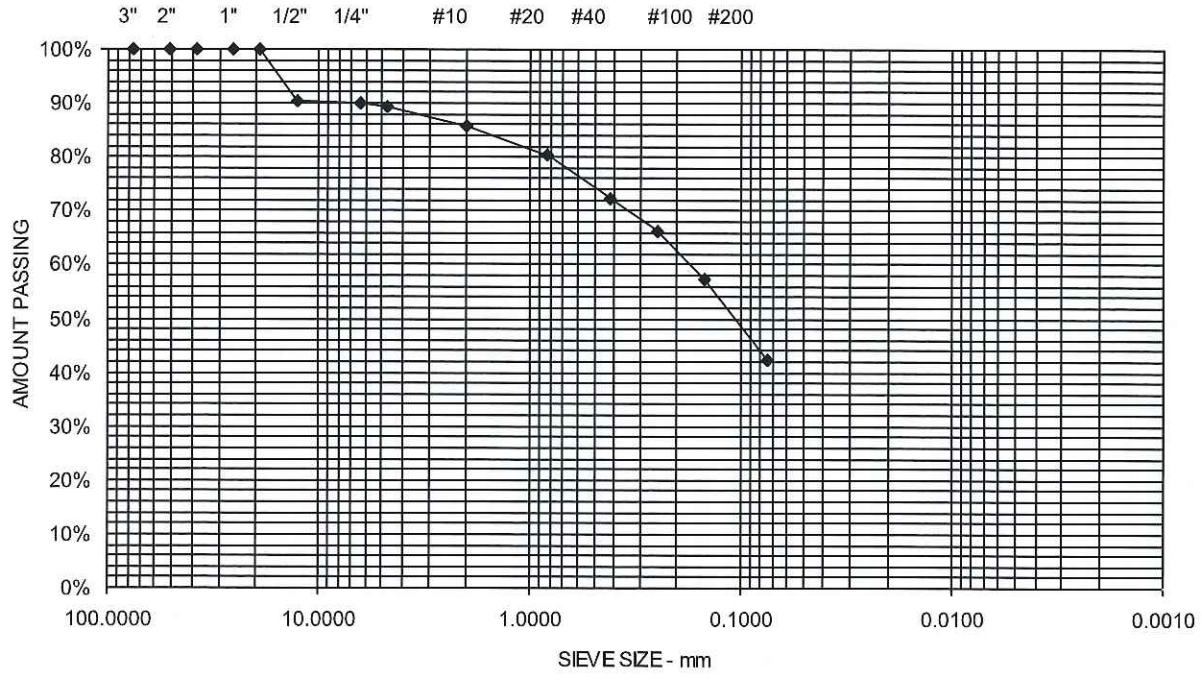
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING	Project Number	16-1136
Client	MAINE MEDICAL CENTER	Lab ID	21880G
		Date Received	11/30/2016
		Date Completed	12/7/2016
Material Source	**B-16-2 10D 40-42'**	Tested By	JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**90**	
6.3 mm	**1/4"**	**90**	
4.75 mm	**No. 4**	**89**	10.8% Gravel
2.00 mm	**No. 10**	**86**	
850 um	**No. 20**	**80**	
425 um	**No. 40**	**72**	47% Sand
250 um	**No. 60**	**66**	
150 um	**No. 100**	**57**	
75 um	**No. 200**	**42.2**	42.2% Fines

SAND AND SILT, SOME GRAVEL, TRACE CLAY



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S.W.COLE ENGINEERING, INC.

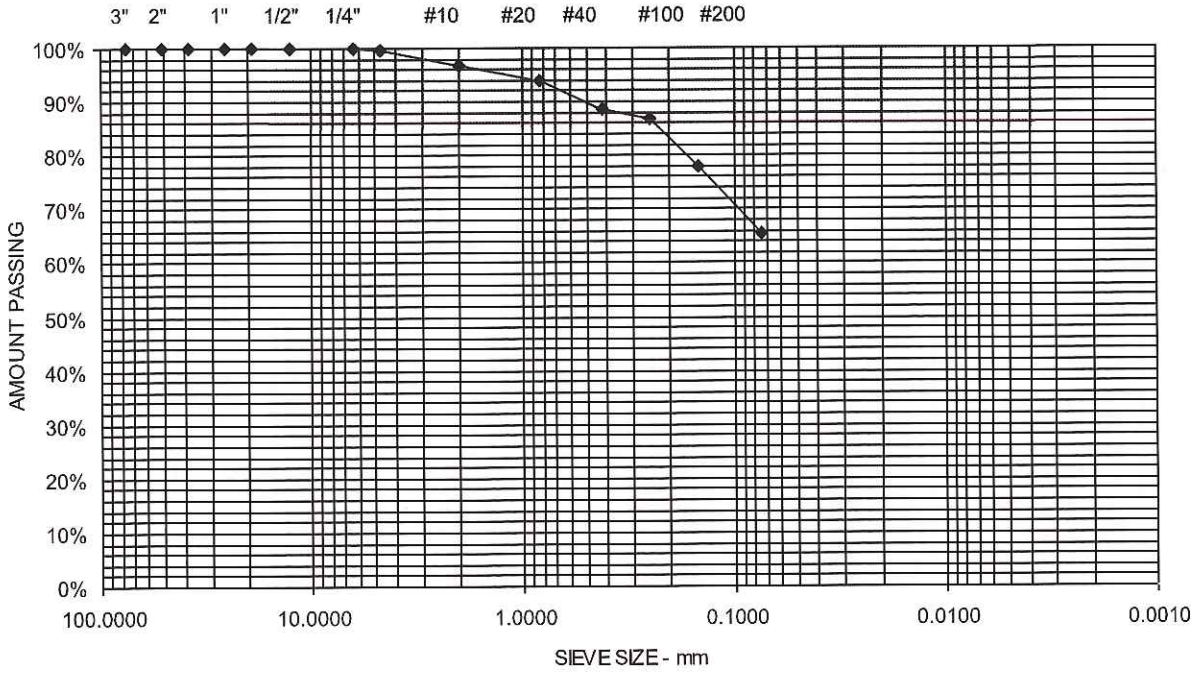
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING	Project Number	16-1136
Client	MAINE MEDICAL CENTER	Lab ID	21881G
		Date Received	11/30/2016
		Date Completed	12/7/2016
Material Source	**B-16-2 14D 60-60.9'**	Tested By	JUSTIN BISSON

STANDARD DESIGNATION (mm/um)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**100**	0.4% Gravel
2.00 mm	**No. 10**	**97**	
850 um	**No. 20**	**94**	
425 um	**No. 40**	**89**	34.3% Sand
250 um	**No. 60**	**87**	
150 um	**No. 100**	**78**	
75 um	**No. 200**	**65.3**	65.3% Fines

SILT AND SAND, SOME CLAY, TRACE GRAVEL



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S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name: PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING

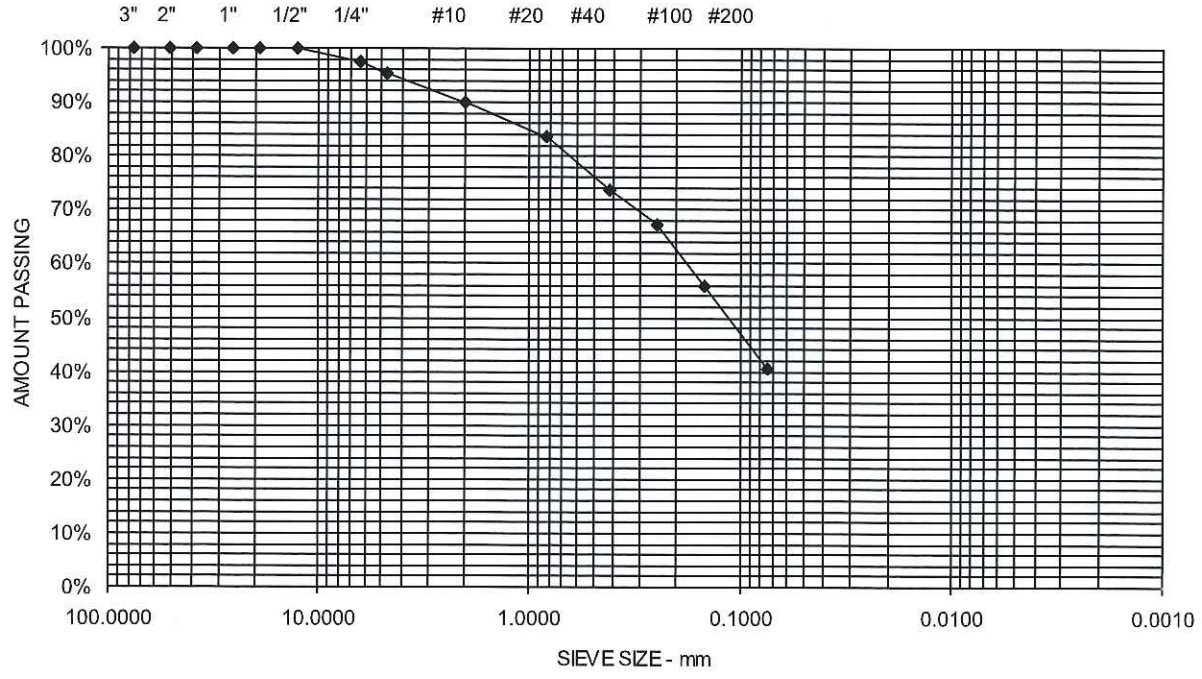
Client: MAINE MEDICAL CENTER

Material Source: **B-16-3 10D 49-51'**

Project Number: 16-1136
Lab ID: 21884G
Date Received: 11/30/2016
Date Completed: 12/7/2016
Tested By: JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
6.3 mm	**1/4"**	**98**	
4.75 mm	**No. 4**	**95**	4.6% Gravel
2.00 mm	**No. 10**	**90**	
850 um	**No. 20**	**83**	
425 um	**No. 40**	**74**	54.8% Sand
250 um	**No. 60**	**67**	
150 um	**No. 100**	**56**	
75 um	**No. 200**	**40.6**	40.6% Fines

SAND AND SILT, SOME CLAY, TRACE GRAVEL



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S.W.COLE ENGINEERING, INC.

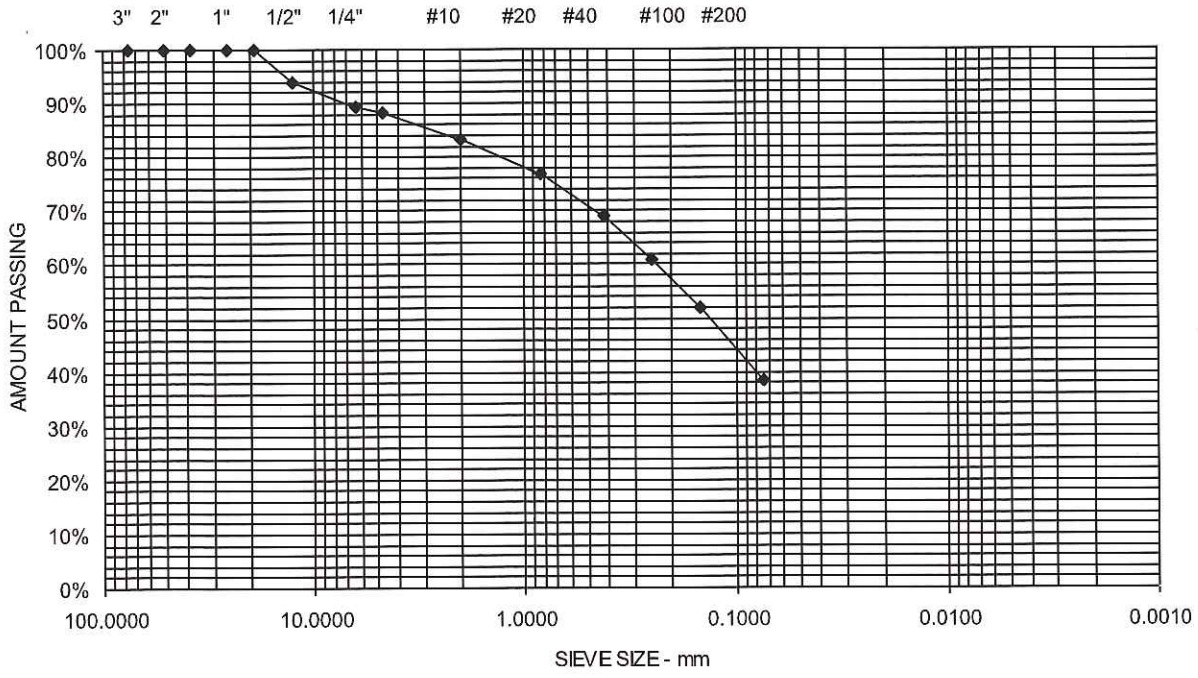
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING	Project Number	16-1136
Client	MAINE MEDICAL CENTER	Lab ID	21900G
		Date Received	12/7/2016
		Date Completed	12/14/2016
Material Source	**B-16-5 10D 45-47'**	Tested By	JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**94**	
6.3 mm	**1/4"**	**89**	
4.75 mm	**No. 4**	**88**	11.6% Gravel
2.00 mm	**No. 10**	**83**	
850 um	**No. 20**	**77**	
425 um	**No. 40**	**69**	50% Sand
250 um	**No. 60**	**61**	
150 um	**No. 100**	**52**	
75 um	**No. 200**	**38.4**	38.4% Fines

SAND AND SILT, SOME GRAVEL



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S.W.COLE ENGINEERING, INC.

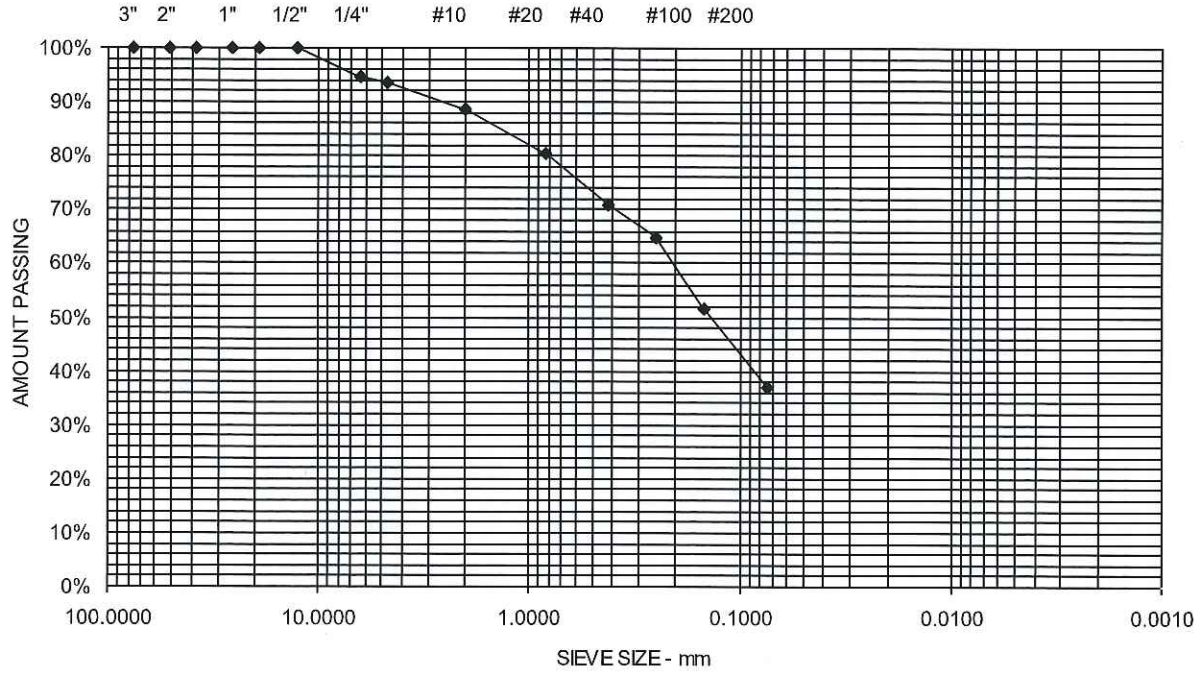
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING	Project Number	16-1136
Client	MAINE MEDICAL CENTER	Lab ID	21901G
		Date Received	12/7/2016
		Date Completed	12/14/2016
Material Source	**B-16-5 13D 60-61'**	Tested By	PAUL SHAFFER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
6.3 mm	**1/4"**	**95**	
4.75 mm	**No. 4**	**94**	6.4% Gravel
2.00 mm	**No. 10**	**89**	
850 um	**No. 20**	**81**	
425 um	**No. 40**	**71**	56.7% Sand
250 um	**No. 60**	**65**	
150 um	**No. 100**	**52**	
75 um	**No. 200**	**36.9**	36.9% Fines

SAND AND SILT, SOME GRAVEL



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S.W.COLE ENGINEERING, INC.

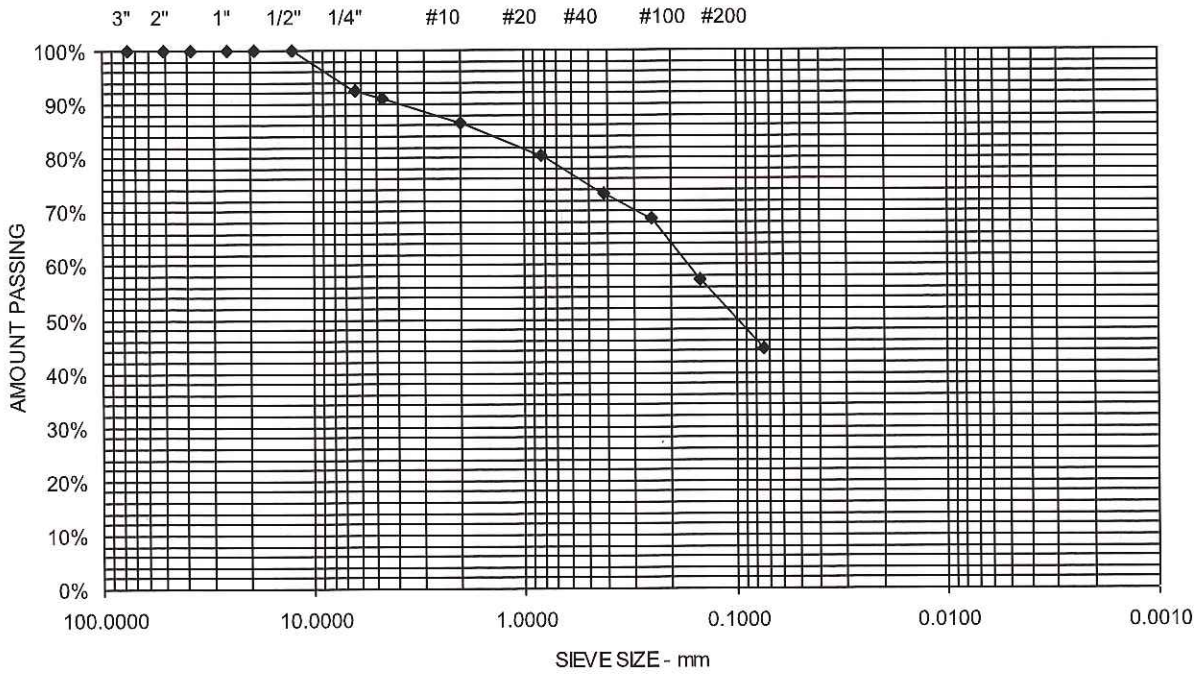
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING	Project Number	16-1136
Client	MAINE MEDICAL CENTER	Lab ID	21905G
		Date Received	12/7/2016
		Date Completed	12/14/2016
Material Source	**B-16-6 8D 35-37'**	Tested By	PAUL SHAFFER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
6.3 mm	**1/4"**	**92**	
4.75 mm	**No. 4**	**91**	9% Gravel
2.00 mm	**No. 10**	**86**	
850 um	**No. 20**	**80**	
425 um	**No. 40**	**73**	46.5% Sand
250 um	**No. 60**	**69**	
150 um	**No. 100**	**57**	
75 um	**No. 200**	**44.6**	44.6% Fines

SAND AND SILT, SOME CLAY, SOME GRAVEL



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S.W.COLE ENGINEERING, INC.

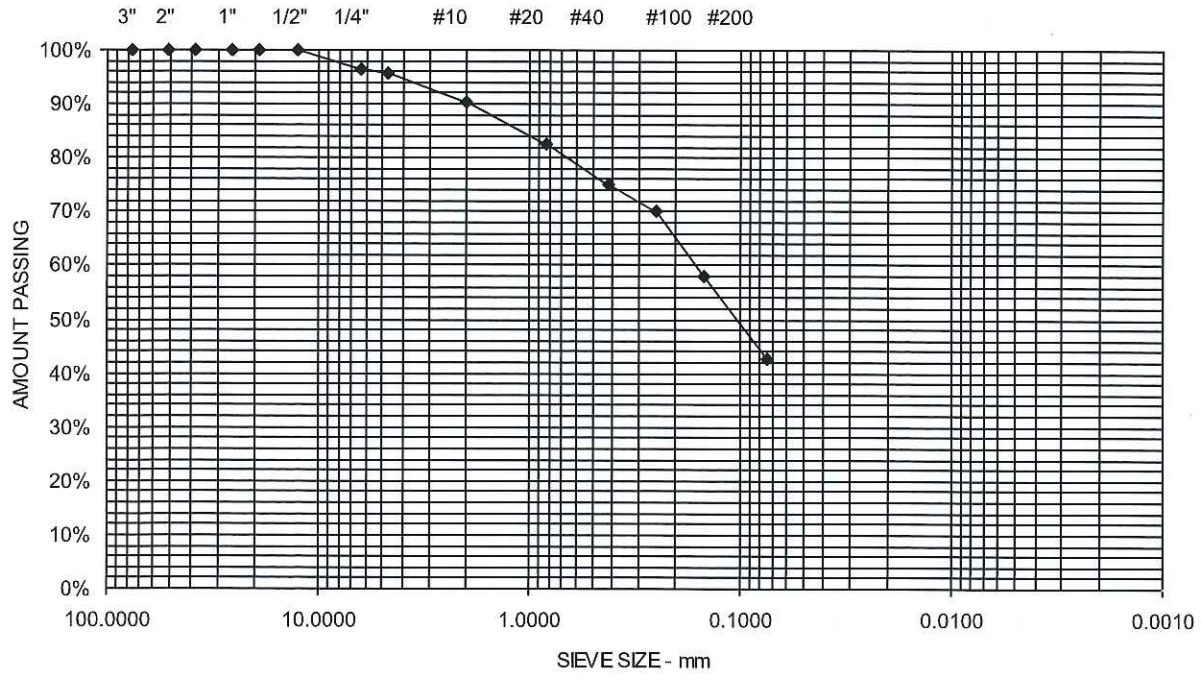
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING	Project Number	16-1136
Client	MAINE MEDICAL CENTER	Lab ID	21906G
		Date Received	12/7/2016
		Date Completed	12/15/2016
Material Source	**B-16-6 11D 50-52'**	Tested By	JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
6.3 mm	**1/4"**	**96**	
4.75 mm	**No. 4**	**96**	4.3% Gravel
2.00 mm	**No. 10**	**90**	
850 um	**No. 20**	**83**	
425 um	**No. 40**	**75**	53.1% Sand
250 um	**No. 60**	**70**	
150 um	**No. 100**	**58**	
75 um	**No. 200**	**42.6**	42.6% Fines

SAND AND SILT, TRACE GRAVEL



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S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name: PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING

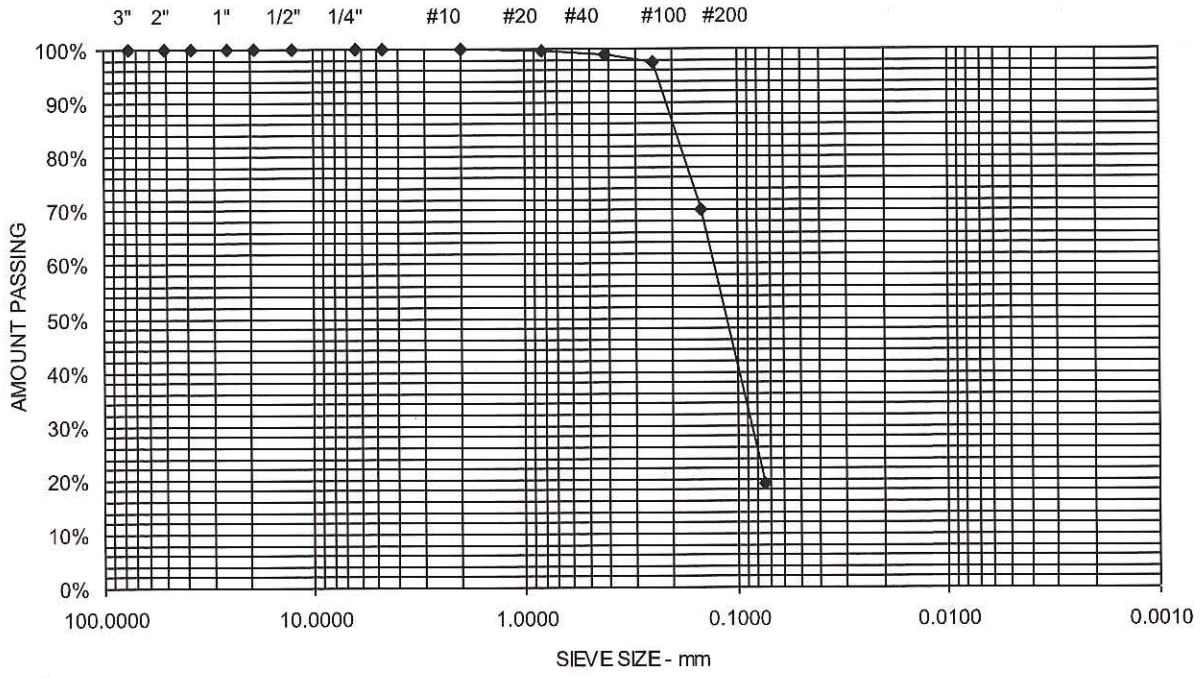
Client: MAINE MEDICAL CENTER

Material Source: **B-16-8 5D 19-21'**

Project Number: 16-1136
Lab ID: 21908G
Date Received: 12/7/2016
Date Completed: 12/15/2016
Tested By: PAUL SHAFFER

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
6.3 mm	**1/4"**	**100**	
4.75 mm	**No. 4**	**100**	0% Gravel
2.00 mm	**No. 10**	**100**	
850 um	**No. 20**	**100**	
425 um	**No. 40**	**99**	80.8% Sand
250 um	**No. 60**	**97**	
150 um	**No. 100**	**70**	
75 um	**No. 200**	**19.2**	19.2% Fines

SILTY SAND



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S.W.COLE ENGINEERING, INC.

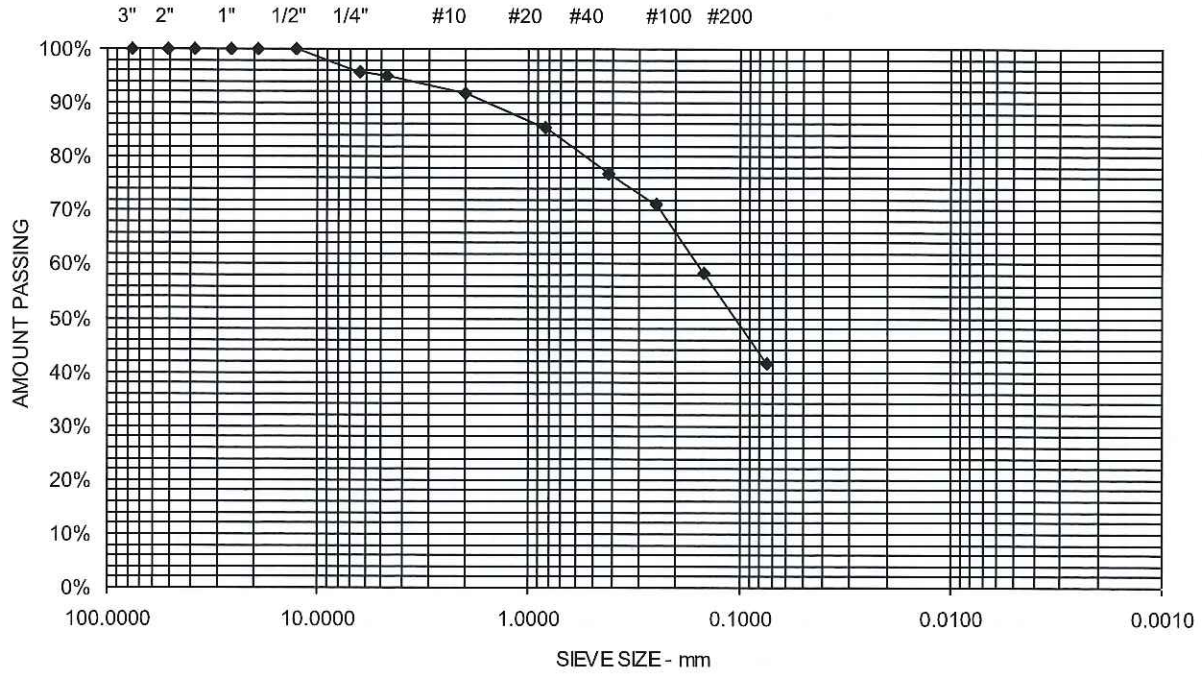
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING	Project Number	16-1136
Client	MAINE MEDICAL CENTER	Lab ID	21909G
		Date Received	12/7/2016
		Date Completed	12/15/2016
Material Source	**B-16-8 6D 24-26'**	Tested By	JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
6.3 mm	**1/4"**	**96**	
4.75 mm	**No. 4**	**95**	4.9% Gravel
2.00 mm	**No. 10**	**92**	
850 um	**No. 20**	**85**	
425 um	**No. 40**	**77**	53.3% Sand
250 um	**No. 60**	**71**	
150 um	**No. 100**	**58**	
75 um	**No. 200**	**41.8**	41.8% Fines

SAND AND SILT, SOME CLAY, TRACE GRAVEL



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S.W.COLE ENGINEERING, INC.

Report of Gradation

ASTM C-117 & C-136

Project Name: PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING

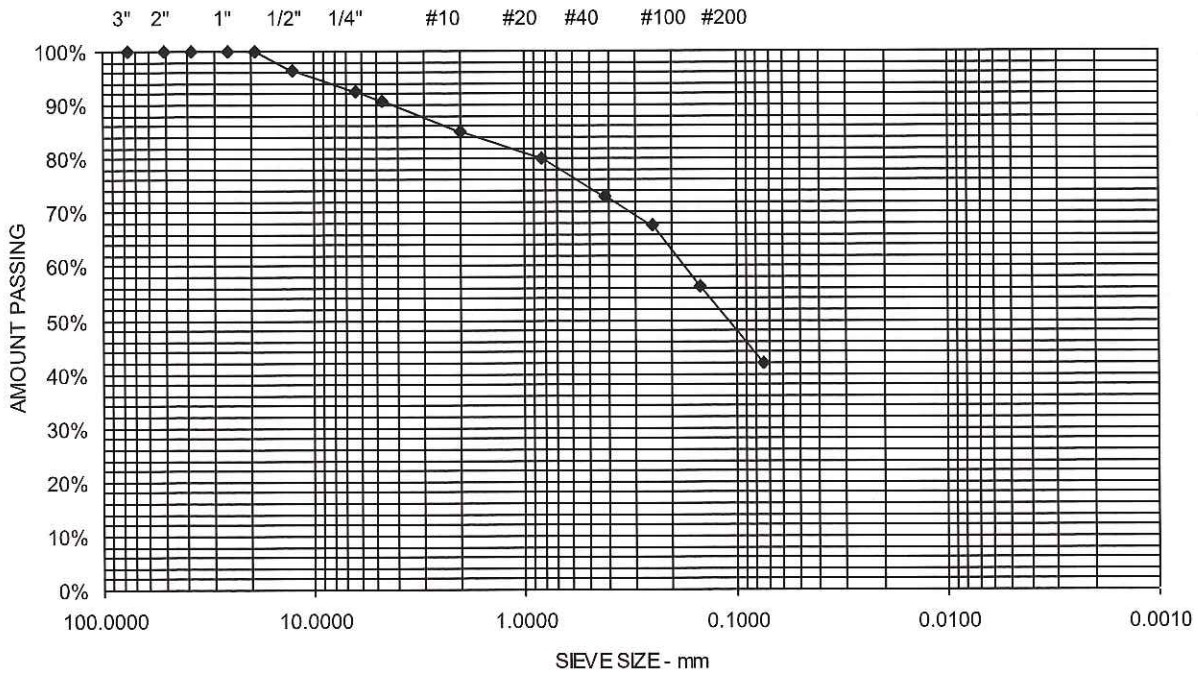
Client: MAINE MEDICAL CENTER

Material Source: **B-16-8 12D 54-56'**

Project Number: 16-1136
Lab ID: 21911G
Date Received: 12/7/2016
Date Completed: 12/15/2016
Tested By: JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**96**	
6.3 mm	**1/4"**	**92**	
4.75 mm	**No. 4**	**91**	9.4% Gravel
2.00 mm	**No. 10**	**85**	
850 um	**No. 20**	**80**	
425 um	**No. 40**	**73**	48.6% Sand
250 um	**No. 60**	**67**	
150 um	**No. 100**	**56**	
75 um	**No. 200**	**42.1**	42.1% Fines

SAND AND SILT, SOME CLAY, SOME GRAVEL



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S.W.COLE ENGINEERING, INC.

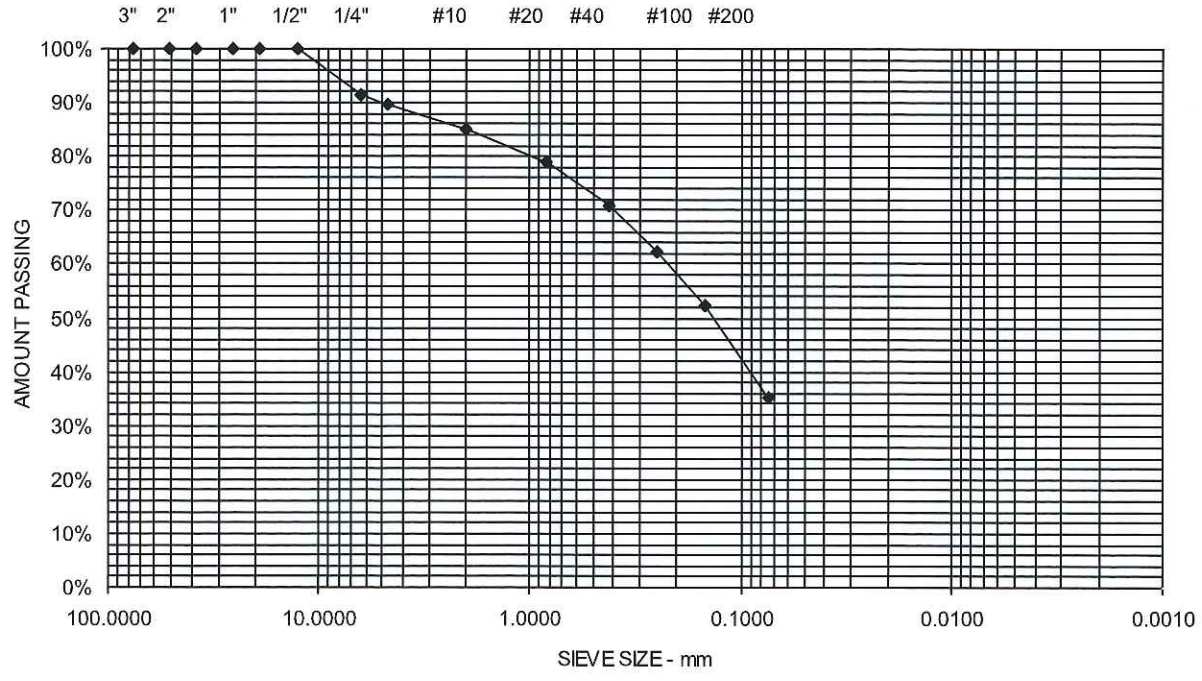
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING	Project Number	16-1136
Client	MAINE MEDICAL CENTER	Lab ID	21928G
		Date Received	12/15/2016
		Date Completed	12/19/2016
Material Source	**B-16-9 19.5-21.5'**	Tested By	JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
6.3 mm	**1/4"**	**92**	
4.75 mm	**No. 4**	**90**	10.4% Gravel
2.00 mm	**No. 10**	**85**	
850 um	**No. 20**	**79**	
425 um	**No. 40**	**71**	54.4% Sand
250 um	**No. 60**	**62**	
150 um	**No. 100**	**52**	
75 um	**No. 200**	**35.2**	35.2% Fines

SAND AND SILT, SOME GRAVEL



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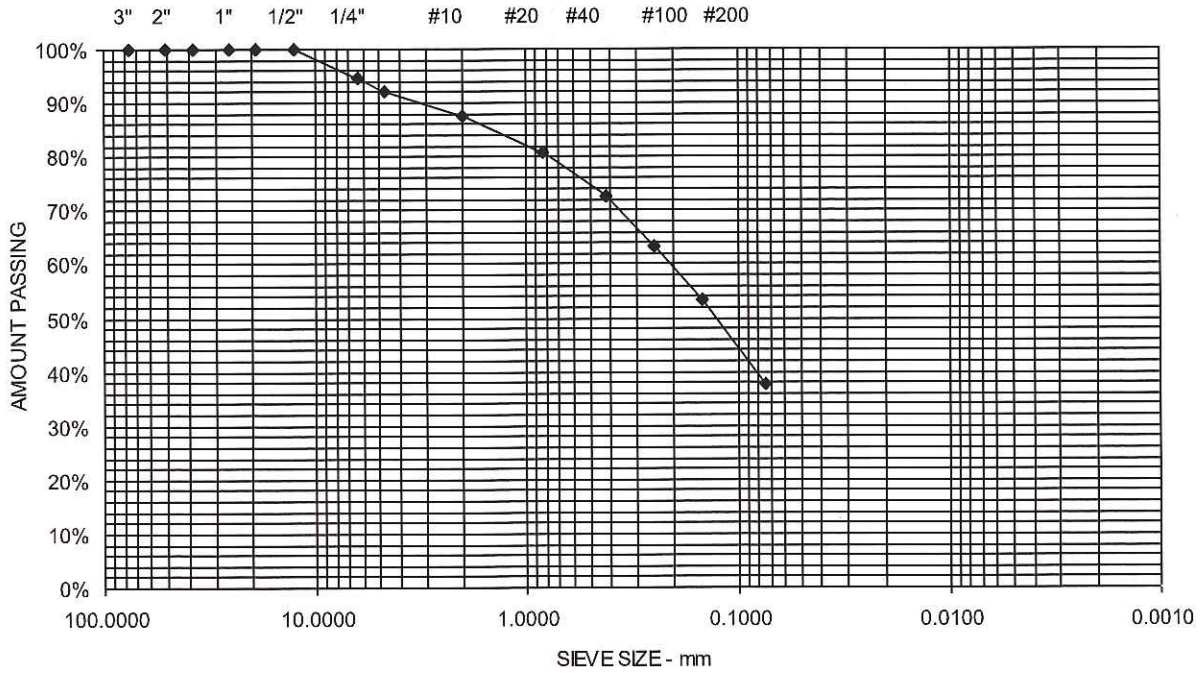
Report of Gradation

ASTM C-117 & C-136

Project Name	PORTLAND ME - PROPOSED GILMAN STREET GARAGE AND CONGRESS STREET BUILDING - GEOTECHNICAL ENGINEERING	Project Number	16-1136
Client	MAINE MEDICAL CENTER	Lab ID	21929G
		Date Received	12/15/2016
		Date Completed	12/19/2016
Material Source	**B-16-9 34.5-36.5'**	Tested By	JUSTIN BISSON

STANDARD DESIGNATION (mm/µm)	SIEVE SIZE	AMOUNT PASSING (%)	
150 mm	**6"**	**100**	
125 mm	**5"**	**100**	
100 mm	**4"**	**100**	
75 mm	**3"**	**100**	
50 mm	**2"**	**100**	
38.1 mm	**1-1/2"**	**100**	
25.0 mm	**1"**	**100**	
19.0 mm	**3/4"**	**100**	
12.5 mm	**1/2"**	**100**	
6.3 mm	**1/4"**	**95**	
4.75 mm	**No. 4**	**92**	7.8% Gravel
2.00 mm	**No. 10**	**88**	
850 um	**No. 20**	**81**	
425 um	**No. 40**	**72**	54.6% Sand
250 um	**No. 60**	**63**	
150 um	**No. 100**	**53**	
75 um	**No. 200**	**37.6**	37.6% Fines

SAND AND SILT, SOME GRAVEL



Comments: w = 11.8%

Sheet

S.W.COLE ENGINEERING, INC.

Consolidation Test

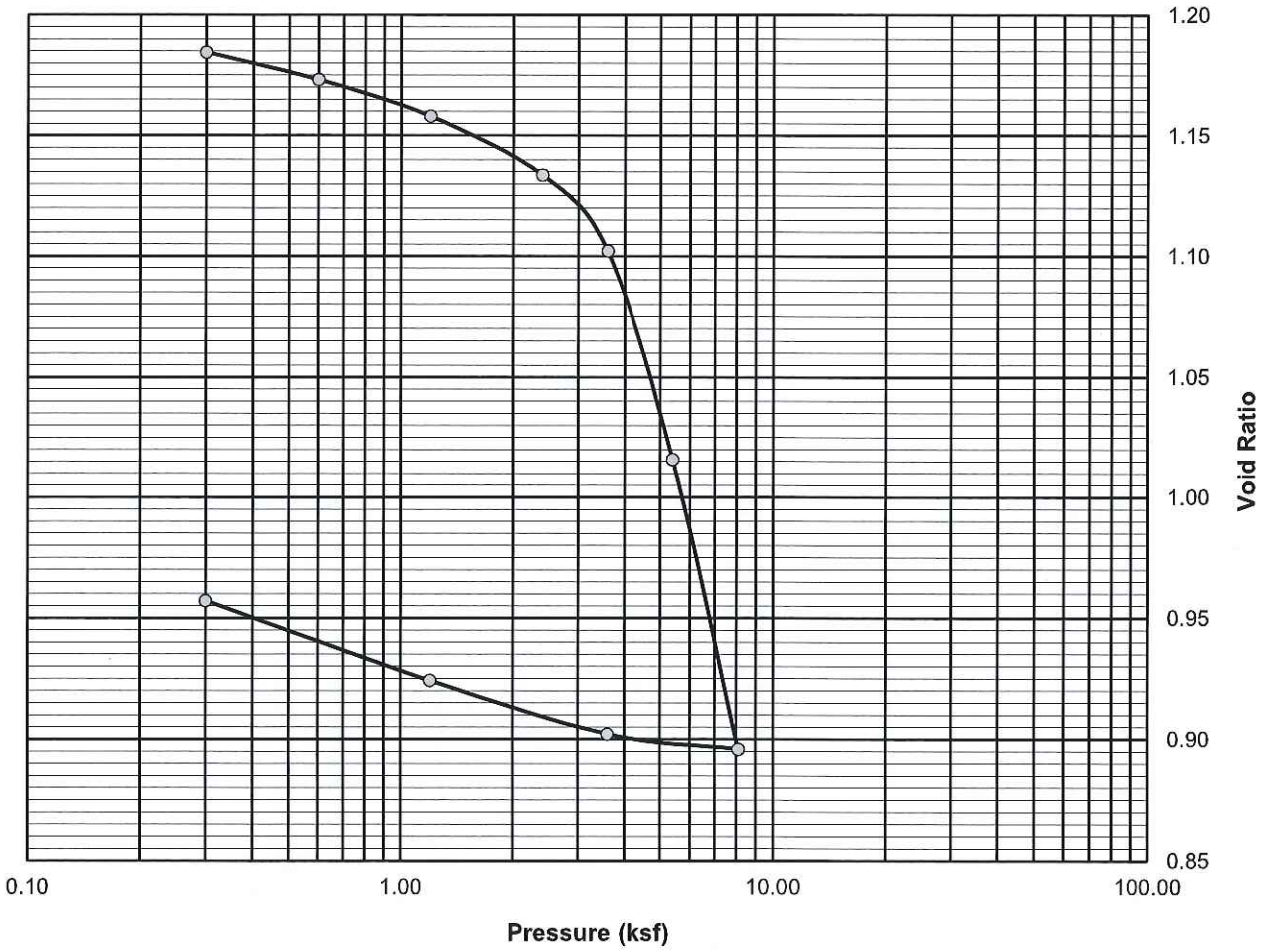
ASTM D-4767

Project Name: Proposed Gilman St. Garage & Congress St. Building
Client: Maine Medical Center

Project Number: 16-1136
Lab ID: 20156B
Date: 12/6/2016

Boring: B-3
Sample: 1S
Depth: 19-21'

P_C =	3.8 ksf
C_C =	0.66
C_R =	0.04
w =	40.1%
W_L =	48
W_P =	20



Comments:

EMW
Reviewed By

APPENDIX C

Report of Analytical Results

Client: Paul Kohler
S. W. Cole Engineering, Inc.
286 Portland Road
Gray,ME 04039

Lab Sample ID: TJ0628-2
Report Date: 28-DEC-16
Client PO:
Project: 16-1136
SDG: TJ0628

Sample Description	Matrix	Date Sampled	Date Received
B-16-8 2D 5-7'	SL	14-DEC-16 00:00:00	15-DEC-16

Parameter	Result	Adj PQL	Adj MDL	Anal. Method	QC Batch	Analysis Date	Prep. Method	Prep. Date	Analyst	Footnotes	RPD/RSD
Chloride	200 mg/Kgdrywt	20	9.9	EPA 325.2	WG197220	21-DEC-16 15:36:00	EPA 300.0	15-DEC-16	SC		
Sulfate-Turbidimetric	300 mg/Kgdrywt	19.	3.8	EPA 375.4	WG197331	23-DEC-16 15:50:24	EPA 300.0	15-DEC-16	SC		
Total Solids	92. %	1		SM2540G	WG196836	19-DEC-16 12:23:19	SM2540G	16-DEC-16	AP		
pH(Soil)	7.2 pH	0.10	0.10	SW846 9045D	WG196958	15-DEC-16 16:23:51	SW846 9045C	15-DEC-16	AP		

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Section 12

Stormwater Management

SEBAGO
TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

STORMWATER MANAGEMENT PLAN

Maine Medical Center
Congress Street Building
Portland, Maine

Prepared for

Maine Medical Center
22 Bramhall Street
Portland, ME 04102

September 25, 2018



09/25/2018

STORMWATER MANAGEMENT PLAN

Maine Medical Center Congress Street Building
Portland, ME

Introduction

This Stormwater Management Plan has been prepared to address the potential impacts on stormwater runoff associated with the construction of a new hospital building on Maine Medical Center's Bramhall Campus.

The Congress Street Building project will consist of a new 6 story, 264,300 square foot hospital building with an approximately 43,900 sf footprint area. The proposed building replaces the existing employee-parking garage located at the corner of Congress Street and Gilman Street and includes redevelopment of the site along Congress Street. The total area of the campus affected by the work, as shown on the exhibits attached to this report is approximately 1.95 acres.

As discussed in this report, the Stormwater analysis and treatment/detention system has been designed to detain and treat rooftop runoff from the existing Visitors Parking Garage adjacent to the new building. Providing treatment from an additional 26,400 sf of parking deck that currently drains un-detained into the combined sewer system in Congress Street.

The impact of the new building is mitigated in part by redeveloping an existing parking structure with the new building whose rooftop includes green roof components.

Development on the Maine Medical Center Bramhall Campus is subject to the Maine Department of Environmental Protection (MDEP) Site location of Development Act and Chapter 500 Stormwater standards, reviewed by the City of Portland under its delegated review authority from MDEP. Based on the proposed development, the project is subject to the MDEP Chapter 500 Basic, General, and Flooding standards, including the redevelopment standards for a Site Law project, as incorporated into the City of Portland Land Use Ordinance and Site Plan review regulations.

The site is located in an area served by a combined sewer system where the City of Portland seeks to mitigate and reduce combined sewer overflow (CSO) events. The design storm events for CSO evaluation is a 1" rainfall, 24-hour design storm (CSO Storm).

Based on discussions with the City staff, the stormwater analysis and the proposed detention/treatment system has been designed to reduce the rate of runoff from the project site including both the new Congress Street Building and the existing Visitor Garage, to the greatest extent possible during this 1" CSO Storm event.

The proposed erosion controls, inspection and maintenance criteria, and the stormwater management systems have been designed to meet MDEP and City of Portland requirements. The proposed design includes a subsurface sand filter Best Management Practice (BMP) which has been designed to meet

the system sizing and treatment requirements for the new building's and redevelopment project standard. The system has been expanded to the extent practicable and to provide treatment for runoff from the adjacent parking garage.

The proposed design meets the applicable standards for system volume, but due to the limited site area, incorporating the runoff from the Visitor Garage will require waiver of the system surface area design criteria. The waiver is simply a trade-off to allow detention of existing runoff volume to address the CSO flows reduction desired by the City.

Permitting and Analysis History

A comprehensive stormwater analysis of the Maine Medical Center Bramhall Campus was completed in January 2004 as part of the Site Location of Development review, by the City of Portland, of the Bramhall Campus Expansion project. This project constructed from 2004-2007 was significant redevelopment of the campus including the construction of the Visitors Garage, Central Utility Plant and East Tower and renovations of the Emergency Department. The 2004 project also included the reconstruction and re-alignment of Crescent Street and separation of storm drainage in Gilman Street.

The redevelopment project fully separated stormwater runoff from the combined sewers within hospital property the campus and the immediately adjacent streets. The separated runoff re-enters the City's combined system at 7 locations abutting the site to facilitate future separation projects that may be undertaken by the City as part if its CSO program.

The 2004 redevelopment project included the installation of two hydrodynamic separator treatment units and separated runoff from approximately 6.3 acres of the campus and Gilman Street (uphill of A Street) the municipal separated storm drain in A Street, fully utilizing the design capacity of the A Street Storm drain.

The 2004 analysis is presented in a Stormwater Management Report dated January 2004 attached to the Maine Medical Center's January 2004 Site Location of Development Application on file in the City of Portland Planning office.

The 2004 post-development analysis subdivided the campus and tributary offsite areas into 20 onsite and offsite sub catchment areas. These sub catchment areas are the basis of the current study's pre-development analysis. The full campus watershed plan is attached for reference, identifying the sub catchments affected by the currently proposed redevelopment.

The discussion of our current analysis focuses on those sub catchments and study points affected by the proposed project, the analysis of off site areas of the campus remains unchanged from the 2004 analysis with exception of the design rainfall events which have been updated in accordance with the design rainfall adopted by the MDEP Chapter 500 regulations in August of 2015.

Site Existing Conditions

The project site includes the area occupied by the hospital's existing employee garage at the corner of Congress Street and Gilman Street. The runoff evaluation area includes portions of Congress Street to the north and east, Gilman Street to the west and the access road between the existing garage and the LL Bean Wing of the hospital to the south.

The campus located in a densely developed urban setting consisting of hospital and office buildings with their associated parking and landscaped areas, public roadways, and multi-family residential housing. The undeveloped areas of the site consist of steeply sloped land abutting Congress Street and Gilman Street. Ground cover in this area consists primarily of grass, brush and evergreen tree growth.

The subject site is located at a high point in the west end of the Portland Peninsula. Runoff from the project site is collected through a series of roof drains and catch basins and conveyed to the combined sanitary/stormwater sewers located within public streets abutting the site. There are currently two Downstream Defender units, installed in 2005, which provide stormwater quality treatment to runoff from the site. One Downstream Defender unit is located in the Visitor Garage on Congress Street, tributary to the municipal combined sewer system that runs down Forest Street to Park Avenue. The outfall of the Visitor Garage's downstream defender will be redirected to a proposed detention and treatment system associated with new Congress Street building to provide peak flow mitigation during the CSO design storm.

The second Downstream Defender unit is located along Gilman Street, in front of the Central Utility Plant, treating stormwater before it enters the municipal separated storm drain in A Street.

Soils

Soil classifications within the project area were referenced from the Cumberland County Medium Intensity Soil Survey. The site is primarily comprised of Hinckley gravelly sand loam. The project geotechnical evaluation report indicates significant depths of granular fill overlaying glacial till. For modeling purposes of this report the soils were considered hydraulic soil groups A consistent with the Cumberland County soil survey.

Proposed Development

Maine Medical Center proposes to construct a new 6 story, 264,300 square foot hospital building with an approximately 43,900 sf footprint area. The new building incorporates green roof elements and replaces the impervious surfaces associated with the existing employee-parking garage.

The Visitors Garage east of the site will remain. The drainage system from the Visitors Garage will be modified for redirect runoff to the proposed building's stormwater treatment system. The stormwater analysis was developed to consider treatment for both the proposed hospital expansion and the existing parking garage.

The site is subject to the Chapter 500 redevelopment standards as a Site Law, although the proposed development will result in the following:

Total Developed Area Subject to Treatment Standards	= 1.53 acres
Total Post Development Impervious area	= 1.19 acres
Redevelopment Impact Rating	= (- 0.5)
Redeveloped Area Requiring Treatment (50%)	= 0.77 acres
Redeveloped Area Receiving Treatment	= 1.95 acres

Regulatory Requirements

City of Portland:

The project is subject to the City of Portland's land use ordinance and Technical Standards applicable to a project with an existing Site Location of Development Permit and reviewed under the City's delegated review authority. The City's standards incorporate the MDEP Chapter 500 standards as follows.

Maine Department of Environmental Protection (MDEP)

MDEP Rule Chapters 500 and 502 describe stormwater management requirements for new development projects. These rules describe performance standards divided into five major categories: Basic Standard, General Standard, Phosphorous Standard, Urban Impaired Stream Standard, and Flooding Standard. The following sections describe how this project will address these stormwater management performance standards.

Basic Standard: A project must meet basic standards if it disturbs an area greater than one (1) acre. As this development will disturb approximately 1.53 acres, it must meet the basic standard. The standard includes various erosion and sedimentation controls, inspection and maintenance procedures, and general housekeeping requirements.

General Standard: A project is subject to the general standard if it results in the creation of one (1) or more acres of impervious area or developed areas greater than five (5) acres. As this project will include approximately 1.19 acres of impervious area, it must meet the general standard, including provisions in the General Standards for Redevelopment projects.

The redevelopment standard applicable to this project is outlined in the Chapter 500.4.C(2)(d). This standard establishes treatment requirements based on a pre and post development pollutant impact rating which establishes a sliding scale of the percentage of Developed Area which must be treated. For Site Law projects, the scale ranges from a minimum of 50% of the developed area to a maximum treatment equal to a new development.

The redevelopment calculations for the current project indicates that a minimum of 50% of the site's redevelopment must be treated. The treatment system proposed exceeds the minimum requirement

as a stand alone project including the Congress Street building and significantly exceeds the minimum standards by providing treatment for the Visitor Garage runoff.

Standard BMPs have been defined by the MDEP and are described thoroughly in their publication Stormwater Management for Maine: Best Management Practices manual, as revised March 2016.

Phosphorous Standard: A project must meet the phosphorous standards if located within a lake watershed. As this project is not tributary to a lake watershed, it is not subject to the phosphorus standard.

Urban Impaired Stream Standard: A project must meet the urban impaired stream standards if located within an urban impaired stream watershed. As this project is not tributary to an Urban Impaired Stream as defined by MDEP Chapter 502, this project is not subject to the urban impaired stream standard.

Flooding Standard: A project must meet to the flooding standards if it creates impervious areas greater than three (3) acres, or developed areas greater than twenty (20) acres. This project includes approximately 1.19 acres of impervious area; however, the City of Portland Technical Manual Section II-C states that all Level III site plans are required to meet the Maine DEP Chapter 500 flooding standard.

City of Portland Combined Sewers

In addition to the Stormwater Management provisions of the Land Use Ordinance and Technical Standards, the project is located in an area served by a combined sewer system where the City seeks to mitigate the rate of flow in the system that contribute to Combined Sewer Overflow (CSO) events. Discussions with the City Public works department in July 2018 have defined the CSO storm event to be a 1" rainfall event modeled using a 24-hour duration Type III storm distribution. The City has requested that the proposed treatment system be designed to mitigate to the extent practicable the rate of runoff from the site during this storm event, and to detain if practicable the runoff from the existing parking garage.

Quality Treatment

To meet the stormwater quality treatment requirements for the site, a subsurface sand filter BMP and a vegetated roof BMP are proposed to treat runoff from proposed development.

A subsurface sand filter utilizing a Cultec pretreatment row and ACF R-Tank detention modules is proposed to treat and store runoff generated from the roof surface of the proposed Congress Street building. Runoff from the roof will be collected in the building's roof drainage system and directed to the subsurface sand filter installed beneath the paved area of the proposed main entrance. The treated stormwater will discharge to the existing combined sewer at a new Manhole in Congress Street, tributary to Study Point C2.

The proposed subsurface sand filter has been sized based on chapter 7.3 of the Maine Department of Environmental Protection (MDEP) BMP Manual: Subsurface Sand Filters, to provide adequate treatment for the water quality volume, pretreatment of the one-year storm using an inlet control structure and isolator row, and detention for larger storm events.

Redevelopment standards apply because the proposed building will replace existing buildings and pavement areas. After completing the calculations outlined in §4.C(2)(d) of Chapter 500, the ranked impact change due to redevelopment is calculated to be -0.5. Because the project is subject to an existing Site Law Permit the minimum level of treatment required 50% of the redeveloped area.

The redevelopment impact ratings are included in Attachment A to this report.

Also included in Attachment A are tables summarizing the impervious and developed areas for the proposed development and the BMP measures treating these areas. The conclusion is a tabulation of the effective treatment percentages for the proposed development. The results of this tabulation indicate the following:

- The post-development area subject to treatment standards includes 1.53 acres of developed area on the Congress Street building site. This area is comprised of approximately 1.19 acres of impervious area (rooftop, driveway and sidewalk areas) and 0.34 acres of landscaped areas.

- The redevelopment standard requires treatment for 50% of this developed areas for a minimum of 0.77 acres.

- The total area receiving treatment is approximately 1.95 acres of developed area including the new Congress Street Building roof and entrance driveway area (1.34 acres) and the Visitor Garage (0.61 acres).

The redevelopment standard requires treatment for 50% of the new developed areas. As such, the site is required to provide treatment for a minimum of 0.77 acres. The total area receiving treatment is approximately 1.95 acres or 128% of the required area.

Stormwater Treatment System

A subsurface soil filter system is proposed below the Congress Street building's entrance plaza at Congress Street is proposed to provide Stormwater Quality and Quantity Treatment. The system presented on the plans is based on R-Tank chambers with Cultec chamber isolator rows for pre treatment

The system sizing criteria is provided in Attachment A to this report and summarized as follows:

Storage Volume Required	= 5,279 cf
Storage Volume Provided	= 5,385 cf
Surface Area Required (Congress Building only)	= 2,564 sf
Surface Area Required (Congress Building and Visitor Garage)	= 3,883 sf
Surface Area Provided	= 3,082 sf

Methodology:

In order to evaluate drainage characteristics as a result of the proposed development activities, a quantitative analysis was performed to determine peak runoff rates in the pre-development and post-development conditions. The evaluation was performed using the methodology outlined in the USDA Soil Conservation Service's "Urban Hydrology for Small Watersheds - Technical Release #55 (TR-55)". HydroCAD computer software was utilized to perform the calculations.

The peak runoff rates were calculated using a 24-hour duration storm event with a Type III rainfall distribution. The rainfall amounts for Cumberland County have recently been updated and the following 24-hour duration rainfall amounts were used for this report:

Storm Frequency	24-hr Duration Rainfall (in.)
CSO Storm	1.0
2-yr	3.1
10-yr	4.6
25-yr	5.8

Twenty sub catchments were analyzed in the pre-development condition, and twenty-two watersheds in the post-development condition. The pre development sub catchment delineations are based the 2004 study post-development watersheds modified to reflect site improvements constructed as part of the 2004-2007 Bramhall Campus Expansion project construction along with record drawings, and field surveys of the drainage infrastructure.

Sub catchment delineations along the hospital building rooftops are based on visible roof drain locations and record design drawings. Due to the age of a number of buildings, records indicating the locations of roof drain connections to the surrounding sewer system are not available. In these cases, the assumed watershed delineations were made based observations of the rooflines and the surrounding topography and sewer infrastructure.

Five Study Points, identified on the attached watershed plans and hydrologic model output as points SP-C1 through SP-C5 have historically been used to evaluate pre and post-developed runoff conditions from the campus. The Study Points represent locations where stormwater runoff, from the project site, enters the public drainage infrastructure system. In most cases, the capacity of the existing combined sewers is small relative the area draining to them under existing conditions. In these cases,

the study points represent the total stormwater discharge at the study point including both gutter flow and flow into the sewer.

Of these study points only two SP-C2 and SP-C3 are affected by the proposed redevelopment.

Study Point SP-C1 represents the point where stormwater runoff from the site enters a combined sewer at the intersection of Wescott Street and Crescent Street. The study point represents runoff at a manhole identified as DMH-25868 on the project plans. The sewer outlet from this manhole is a 12" cement line that drains in a westerly direction along Crescent Street, eventually draining to Park Avenue via sewers in Ellsworth Street, Congress Street and Weymouth Street.

Study Point SP-C2 represents the point where runoff from the existing Maine Medical Center parking garage, enters a combined sewer at the intersection of Congress Street and Forest Street. The study point represents runoff at a manhole SMH-13952 on the project plans. The sewer outlet from this manhole is an 18" reinforced concrete pipe that drains in a northerly direction along Forest Street to Park Avenue.

Study Point SP-C3 represents the point where runoff from areas of the project site east of the existing visitor garage enters the combined sewer system at the intersection of Gilman Street and Congress Street. At this point runoff within the sewer system discharges in a northerly direction along Gilman Street to Park Avenue. Runoff in the roadway that bypasses the catch basins at the intersection discharges in a westerly direction along Congress Street to St. John Street.

Study Point SP-C4 represents at the intersection of Gilman Street and A Street where runoff from areas of the site including the existing emergency room parking area, L.L. Bean wing, and service areas abutting the central utility plant is directed to the A Street storm drain. A Downstream Defender stormwater treatment system was installed in 2005.

Study Point SP-C5 represents runoff at the intersection of Ellsworth Street and Wescott Street. Runoff currently enters the combined sewer system via manholes in Ellsworth Street and drains in an easterly direction along Ellsworth Street towards its intersection with Congress Street.

The areas and times of concentration of the post-development watersheds vary from the existing conditions based on the proposed site development. Due to the highly-developed nature of the site, the time of concentration in some watersheds is less than six minutes. A minimum time of concentration of six minutes was used in these cases.

Table 1 summarizes the results of the hydrologic analysis of the project under pre-development and post-development conditions.

Table 1 Stormwater Peak Discharge Summary Table									
Study Point	2-Year Storm			10-Year Storm			25-Year Storm		
	Pre (cfs)	Post (cfs)	Diff. (cfs)	Pre (cfs)	Post (cfs)	Diff. (cfs)	Pre (cfs)	Post (cfs)	Diff. (cfs)
SP-C1	1.28	1.28	0.00	2.39	2.39	0.00	3.31	3.31	0.00
SP-C2	6.45	3.78	-2.67	9.14	6.88	-2.26	11.23	11.15	-0.08
SP-C3	1.72	1.53	-0.19	4.28	4.05	-0.23	5.76	5.21	-0.55
SP-C4	14.04	13.78	-0.26	25.22	24.94	-0.28	34.61	34.33	-0.28
SP-C5	1.60	1.60	0.00	3.01	3.01	0.00	4.07	4.07	0.00

The results of the stormwater modeling at Study Point SP-C1 to SP-C5 indicate that the peak rates of runoff in the post-development condition will be less than the pre-developed condition for the 2-year, 10-year, and 25-year storm events.

Study points SP-C2 and SP-C3 were further evaluated to determine the impact on peak flow rate and runoff duration from the project site during the 1" CSO Storm event. The proposed subsurface sand filter has been expanded in size to allow for the detention of runoff from the Congress building and the Parking Garage. The system outlets have been designed to maximize the detention of runoff generated from a 1" rainfall to reduce the peak rate of runoff during this storm and to extend the duration of that runoff as long as practicable to mitigate and reduce the site's contribution to offsite CSO events. The results during this event are summarized in Table 2 below.

The modeling node used to evaluate the connection point to the City system is node SMH-1 representing ESMH-13952.

Table 2 CSO Event Summary Table			
Study Point	1"- 24 Hour Type III Storm		
	Peak Runoff		
	Pre (cfs)	Post (cfs)	Diff. (cfs)
ESMH-13952	1.34	0.28	-1.06 (80%)

The results of the analysis indicates that the proposed system reduces the rate of runoff at the connection to the City's combined sewer by approximately 80%.

To further evaluate the attenuation of flow from the project site during smaller storm events, Table 3 below summarized the performance of the proposed subsurface sand filter detention system identified as Node 1P+G(R-Tank System with Garage) in the model. The table below evaluates the inflow

hydrograph into the system and the outflow hydrograph to the City system during a 1" storm event. This summary most closely represents the contribution of the project site runoff, without the influence of offsite runoff.

The proposed design will reduce the peak rate of runoff from a 1" storm event by 97% compared to the un detained discharge

Table 3 CSO Event Summary Table			
Study Point	1"- 24 Hour Type III Storm		
	Peak Runoff		
	Pre (cfs)	Post (cfs)	Diff. (cfs)
R-Tank System	1.48	0.04	-1.44 (97%)

Conclusion

Erosion and sedimentation controls, inspection and maintenance procedures and general housekeeping requirements have been outlined to prevent unreasonable impacts on the site and to the surrounding environment.

By utilizing Best Management practices, stormwater quality treatment has been provided for at least 50% of the total impervious area and at least 50% of the total developed area. Based on the modeling data, the post-development peak rates of runoff for the 2-year, 10-year, and 25-year storm events demonstrate decreases in the peak rates of runoff when compared to the pre-development peak rates of runoff.

The proposed detention and treatment system meets all of the applicable sizing criteria for minimum surface area, channel protection volume, sediment pretreatment volume to address the requirements for the Congress Street Building project. At the City's request, the system has been expanded to accept runoff from the adjacent Visitor Garage for the purpose of detaining runoff from the existing development during a CSO event storm.

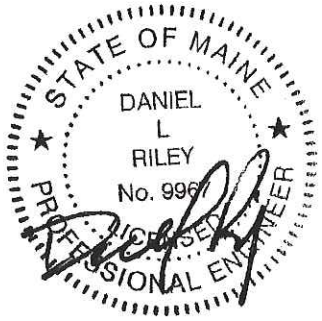
With the addition of this area, the system continues to meet the applicable sizing criteria with the exception of the minimum surface area criteria. The proposed system provides approximately 120% of the required area for the Congress Street Building alone. The proposed system provides 80% of the required area for the combined Congress Building and parking garage footprint. Meeting the full area requirement would require an additional 800 sf of system area which is not available on this site.

With the incorporation of the above referenced erosion control, treatment and detention measures, the project has been designed in conformance with the Maine Department of Environmental Protection Chapter 500 Stormwater Law and City of Portland Stormwater Management Standards.

Accordingly, it is anticipated that stormwater runoff from the proposed development will not cause a significant adverse effect to off-site receiving channels or downstream properties.

Prepared by,

SEBAGO TECHNICS, INC.



09/25/2018

Daniel L. Riley, P.E.
Vice President, Engineering

September 25, 2018

Appendix A

STORWATER QUALITY CALCULATIONS

Table 3: MDEP GENERAL STANDARD CALCULATIONS: MMC Congress Street Building, Portland, Maine

AREA ID	WATERSHED SIZE (S.F.)	EXISTING IMPERVIOUS AREA (To Remain) (S.F.)	NEW IMPERVIOUS AREA (S.F.)	EXISTING LANDSCAPED AREA (To Remain) (S.F.)	NEW LANDSCAPED AREA (S.F.)	NEW DEVELOPED AREA (S.F.)	UNDEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	NEW IMPERVIOUS AREA TREATED* (S.F.)	NEW LANDSCAPED AREA TREATED* (S.F.)	NEW DEVELOPED AREA TREATED* (S.F.)	TREATMENT BMP
3.1	10,051	8,335	0	1,716	0	0	0	NO	0	0	0	NONE
3.2	4,089	4,089	0	0	0	0	0	NO	0	0	0	NONE
14.1	22,477	14,929	5,018	0	2,530	7,548	0	NO	0	0	0	NONE
15.1	18,644	10,163	443	8,038	0	443	0	NO	0	0	0	NONE
17.1A	43,616	0	43,616	0	0	43,616	0	YES	43,616	0	43,616	SSSF
17.1B	14,879	0	2,836	0	12,043	14,879	0	YES	2,836	12,043	14,879	Green Roof
18	26,386	26,386	0	0	0	0	0	YES	26,386	0	26,386	SSSF
SUM	140,142	63,902	51,913	9,754	14,573	66,486	0	-	72,838	12,043	84,881	-

Designations: SSSF=Subsurface Sand Filter

TOTAL NEW IMPERVIOUS AREA (S.F.)	51,913	TOTAL NEW DEVELOPED AREA (S.F.)	66,486
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (S.F.)	72,838	TOTAL DEV. AREA RECEIVING TREATMENT (S.F.)	84,881
% OF IMPERVIOUS AREA RECEIVING TREATMENT	140.3%	% OF DEV. AREA RECEIVING TREATMENT	127.7%

Table 4: MDEP REDEVELOPMENT STANDARD CALCULATIONS: MMC Congress Street Building, Portland, Maine

Existing Areas by Pollutant Ranking (S.F.)							Proposed Areas by Pollutant Ranking (S.F.)						
0	1	2	3	4	5	SUM	0	1	2	3	4	5	SUM
0	6,538	17,424	1,739	43,699	0	69,400	0	328	22,153	46,919	0	0	69,400

Existing Areas by Pollutant Ranking (acres)							Proposed Areas by Pollutant Ranking (acres)						
0	1	2	3	4	5	SUM	0	1	2	3	4	5	SUM
0.000	0.150	0.400	0.040	1.003	0.000	1.593	0.000	0.008	0.509	1.077	0.000	0.000	1.593

Existing Weighted Average (Item C)	Proposed Weighted Average (Item D)
5.083	4.256

Total Development Area (acres)	Total Redevelopment Area (acres)
1.593	1.593

Ranked Impact Change Due to Redevelopment (Item E)
-0.5

Percent Increase in Developed Area
0.00%

Treatment Levels for Redevelopment Projects	
Ranked Impact Change Due to Redevelopment (Item E)	**Percentage of Developed Area that Must be Treated**
0.0 or less	0% (Stormwater projects) 50% (Site projects)
≤ 0.0 to ≥ 1.0	60%
> 1.0 to ≥ 2.0	70%
> 2.0 to ≥ 3.0	80%
> 3.0	Same treatment level as for new development

SEBAGO TECHNICS, INC.
75 John Roberts Road Suite 4A
South Portland, Maine 04106
Tel. (207) 200-2100

JOB	15466 - Congress Street Building		
SHEET NO.	1	OF	3
CALCULATED BY	DLR	DATE	7/18/2018
FILE NAME	15466 - Stormwater calcs Congre:	PRNT DATE	9/24/2018

UNDERDRAINED SUBSURFACE SAND FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

References
1. Maine DEP Chapter 500, Section 4.B.(2)(b)
   a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"

Proposed Congress Building

Tributary to Subsurface Sand Filter #1

Landscaped Area	12,043	SF					
Impervious Area	46,452	SF					

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5% X Impervious)

Total Landscaped Area	12,043	SF	Area	240.9	SF		
Total Impervious Area	46,452	SF	Area	2,322.6	SF		
Required Minimum Surface Area				2,563.5	SF		
Provided Surface Area				3,082.0	SF		

Channel Protection Volume (CPV)

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	12,043	SF	Volume	401.4					
Impervious Area	46,452	SF	Volume	3,871.0					
CPV Required				4,272.4	CF	0.098	AF		
Provided CPV				6,800.0	CF	4,790 cf@ Elev 52.75			

Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:	3.32	cfs			
Iso Row sizing for:	902HD	**0.2**	cfs		
Total number of Isolator Row Chambers required:	17		25	Provided	

SEBAGO TECHNICS, INC.
75 John Roberts Road Suite 4A
South Portland, Maine 04106
Tel. (207) 200-2100

JOB	15466 - Congress Street Building		
SHEET NO.	2	OF	3
CALCULATED BY	DLR	DATE	7/18/2018
FILE NAME	15466 - Stormwater calcs Congre:	PRNT DATE	9/24/2018

UNDERDRAINED SUBSURFACE SAND FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

References
1. Maine DEP Chapter 500, Section 4.B.(2)(b)
   a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"

Existing Visitor Garage

Tributary to Subsurface Sand Filter #1

Landscaped Area	0	SF					
Impervious Area	26,386	SF					

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5% X Impervious)

Total Landscaped Area	0	SF	Area	0.0	SF		
Total Impervious Area	26,386	SF	Area	1,319.3	SF		
Required Minimum Surface Area				1,319.3	SF		
Provided Surface Area				*	SF		

Channel Protection Volume (CPV)

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	0	SF	Volume	0.0					
Impervious Area	26,386	SF	Volume	2,198.8					
Pre Treatment Credit (%)	25%								
CPV Required				1,649.1	CF	0.038	AF		
Provided CPV				*	CF				

Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:	1.53	cfs	
Iso Row sizing for:	902HD	**0.2**	cfs
Total number of Isolator Row Chambers required:	8		

SEBAGO TECHNICS, INC.
75 John Roberts Road Suite 4A
South Portland, Maine 04106
Tel. (207) 200-2100

JOB	15466 - Congress Street Building		
SHEET NO.	3	OF	3
CALCULATED BY	DLR	DATE	7/18/2018
FILE NAME	15466 - Stormwater calcs Congre:	PRNT DATE	9/24/2018

UNDERDRAINED SUBSURFACE SAND FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

References
1. Maine DEP Chapter 500, Section 4.B.(2)(b)
   a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"

Congress Building and Visitor Garage

Tributary to Subsurface Sand Filter #1

Landscaped Area	12,073	SF				
Impervious Area	72,838	SF				

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5% X Impervious)

Total Landscaped Area	12,073	SF	Area	241	SF	
Total Impervious Area	72,838	SF	Area	3,642	SF	
Required Minimum Surface Area				3,883	SF	
Provided Surface Area				3,082	SF	

Channel Protection Volume (CPV)

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	12,073	SF	Volume	402				
Impervious Area (Bldg)	43,558	SF	Volume	3,630				
Site Pavement	2,894							
Impervious Area (Garage)	26,386			2,199				
Pretreatment Credit (Garage, 25%)		-25%		-550		(ASSUMES 25% Pretreament Credit for HIL Unit)		
CPV Required				5,279	CF	0.121	AF	
Provided CPV				5,385	CF	@ Elev 51.2		

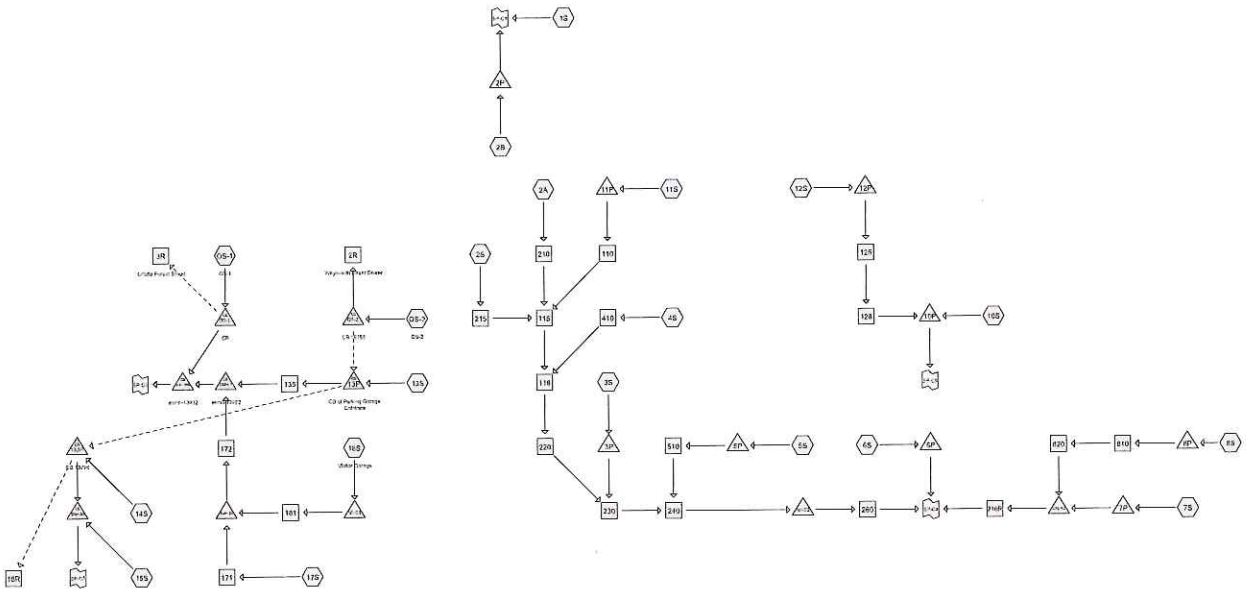
Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:	4.50	cfs	
Iso Row sizing for: 902HD	**0.2**	cfs	
Total number of Isolator Row Chambers required:	23	25	

Appendix B

HYDROCAD OUTPUT



Subcat Reach Pond Link

Routing Diagram for 15466 - Congress CD PRE
Prepared by Sebago Technics, Inc., Printed 9/24/2018
HydroCAD® 10.00-15 s/n 01856 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.354	39	>75% Grass cover, Good, HSG A (1S, 2B, 3S, 5S, 6S, 8S, 10S, 14S, 15S)
7.080	98	Paved parking (1S, 2A, 2B, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 10S, 11S, 12S, 13S, 14S, 15S, 17S)
2.834	98	Roofs (5S, 6S, 8S, 10S, 18S)
1.998	89	Urban commercial, 85% imp, HSG A (13S, OS-1, OS-2)
1.517	43	Woods/grass comb., Fair, HSG A (7S, 8S, 13S)
15.783	**83**	**TOTAL AREA**

Summary for Subcatchment 1S:

Runoff = 0.03 cfs @ 12.16 hrs, Volume= 0.004 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	14,272	98	Paved parking
	5,174	39	>75% Grass cover, Good, HSG A
	19,446	82	Weighted Average
	5,174		26.61% Pervious Area
	14,272		73.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.0500	0.20		**Sheet Flow, SHEET A TO B** Grass: Short n= 0.150 P2= 3.00"
0.2	33	0.0500	3.35		**Shallow Concentrated Flow, SHALLOW B TO C** Grassed Waterway Kv= 15.0 fps
0.3	82	0.0420	4.16		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
0.1	74	0.0500	10.99	8.63	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
2.0					**Direct Entry, DIRECT**
6.0	229	Total			

Summary for Subcatchment 2A:

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.038 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	25,217	98	Paved parking
	25,217		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.60		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
1.3	112	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
3.9					**Direct Entry, DIRECT**
6.0	142	Total			

Summary for Subcatchment 2B:

Runoff = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	10,133	98	Paved parking
	3,735	39	>75% Grass cover, Good, HSG A
	13,868	82	Weighted Average
	3,735		26.93% Pervious Area
	10,133		73.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	30	0.0100	0.79		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.5	123	0.0380	3.96		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
2.0	131	0.0005	1.10	0.86	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
2.9					**Direct Entry, DIRECT**
6.0	284	Total			

Summary for Subcatchment 2S:

Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	16,157	98	Paved parking
	16,157		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0180	1.00		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	78	0.0370	3.90		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	136	0.0107	5.08	3.99	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
4.8					**Direct Entry, DIRECT**
6.0	244	Total			

Summary for Subcatchment 3S:

Runoff = 0.06 cfs @ 12.11 hrs, Volume= 0.006 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	3,076	39	>75% Grass cover, Good, HSG A
*	11,898	98	Paved parking
	14,974	86	Weighted Average
	3,076		20.54% Pervious Area
	11,898		79.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0250	1.14		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	106	0.0810	5.78		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.2	222	0.0530	14.83	26.20	**Pipe Channel, PIPE C TO D** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
5.1					**Direct Entry, DIRECT**
6.0	358	Total			

Summary for Subcatchment 4S:

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	23,249	98	Paved parking
	23,249		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
1.3	110	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
3.4					**Direct Entry, DIRECT**
6.0	160	Total			

Summary for Subcatchment 5S:

Runoff = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	25,085	98	Paved parking
	26,415	39	>75% Grass cover, Good, HSG A
*	73,528	98	Roofs
	125,028	86	Weighted Average
	26,415		21.13% Pervious Area
	98,613		78.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	35	0.0050	0.62		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
2.2	355	0.0050	2.65	0.93	**Pipe Channel, PIPE B TO C** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.1	35	0.0300	8.51	6.69	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.2	85	0.0160	6.22	4.88	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
2.6					**Direct Entry, DIRECT**
6.0	510	Total			

Summary for Subcatchment 6S:

Runoff = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	2,282	39	>75% Grass cover, Good, HSG A
*	501	98	Paved parking
*	8,302	98	Roofs
	11,085	86	Weighted Average
	2,282		20.59% Pervious Area
	8,803		79.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	30	0.0100	0.79		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	64	0.0100	3.75	1.31	**Pipe Channel, PIPE B TO C (ROOF DRAIN)** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.0	27	0.0740	10.20	3.56	**Pipe Channel, PIPE C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
5.1					**Direct Entry, DIRECT**
6.0	121	Total			

Summary for Subcatchment 7S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	56,212	43	Woods/grass comb., Fair, HSG A
*	36,084	98	Paved parking
	92,296	65	Weighted Average
	56,212		60.90% Pervious Area
	36,084		39.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	75	0.0400	1.66		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.5	78	0.0180	2.72		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.7	219	0.0590	4.93		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
0.2	72	0.0970	6.32		**Shallow Concentrated Flow, SHALLOW D TO E** Paved Kv= 20.3 fps
0.2	190	0.1020	15.70	12.33	**Pipe Channel, PIPE E TO F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
3.6					**Direct Entry, DIRECT**
6.0	634	Total			

Summary for Subcatchment 8S:

Runoff = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	16,895	98	Paved parking
	7,542	43	Woods/grass comb., Fair, HSG A
	8,958	39	>75% Grass cover, Good, HSG A
*	12,138	98	Roofs
	45,533	77	Weighted Average
	16,500		36.24% Pervious Area
	29,033		63.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	40	0.0050	0.64		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	93	0.0100	4.91	3.86	**Pipe Channel, PIPE B TO C** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.5	135	0.0100	4.91	3.86	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.4	131	0.0100	4.91	3.86	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
3.8					**Direct Entry, DIRECT**
6.0	399	Total			

Summary for Subcatchment 10S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	25,937	39	>75% Grass cover, Good, HSG A
*	9,276	98	Paved parking
*	2,034	98	Roofs
	37,247	57	Weighted Average
	25,937		69.64% Pervious Area
	11,310		30.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0400	1.38		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.1	37	0.0540	4.72		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	75	0.0200	2.87		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
0.3	113	0.0210	7.12	5.59	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.3	71	0.0050	3.47	2.73	**Pipe Channel, PIPE E TO F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
4.5					**Direct Entry, DIRECT**
6.0	326	Total			

Summary for Subcatchment 11S:

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	11,050	98	Paved parking
	11,050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.60		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.7	60	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
4.5					**Direct Entry, DIRECT**
6.0	90	Total			

Summary for Subcatchment 12S:

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	23,268	98	Paved parking
	23,268		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.60		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.9	80	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	90	0.0100	3.75	1.31	**Pipe Channel, PIPE C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
3.9					**Direct Entry, DIRECT**
6.0	200	Total			

Summary for Subcatchment 13S:

Runoff = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	14,571	98	Paved parking
	2,309	43	Woods/grass comb., Fair, HSG A
	19,134	89	Urban commercial, 85% imp, HSG A
	36,014	90	Weighted Average
	5,179		14.38% Pervious Area
	30,835		85.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		**Sheet Flow, SHEET A TO B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.2	51	0.6400	4.00		**Shallow Concentrated Flow, SHALLOW B TO C** Woodland Kv= 5.0 fps
0.4	105	0.0420	4.16		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
6.2	196	Total			

Summary for Subcatchment 14S:

Runoff = 0.00 cfs @ 23.95 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	14,684	98	Paved parking
	15,059	39	>75% Grass cover, Good, HSG A
	29,743	68	Weighted Average
	15,059		50.63% Pervious Area
	14,684		49.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	45	0.0680	0.23		**Sheet Flow, SHEET A TO B** Grass: Short n= 0.150 P2= 3.00"
1.0	217	0.0320	3.63		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
1.7					**Direct Entry, DIRECT**
6.0	262	Total			

Summary for Subcatchment 15S:

Runoff = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	11,909	39	>75% Grass cover, Good, HSG A
*	15,681	98	Paved parking
	27,590	73	Weighted Average
	11,909		43.16% Pervious Area
	15,681		56.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	18	0.2770	0.33		**Sheet Flow, SHEET A TO B** Grass: Short n= 0.150 P2= 3.00"
0.5	190	0.1920	6.57		**Shallow Concentrated Flow, SHALLOW B TO C** Grassed Waterway Kv= 15.0 fps
0.5	176	0.0760	5.60		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
4.1					**Direct Entry, DIRECT**
6.0	384	Total			

Summary for Subcatchment 17S:

Runoff = 0.81 cfs @ 12.09 hrs, Volume= 0.061 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	40,392	98	Paved parking
	40,392		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	40	0.0100	0.84		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.1	14	0.0100	2.03		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.1	134	0.1600	15.00	5.24	**Pipe Channel, PIPE C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
5.0					**Direct Entry, DIRECT**
6.0	188	Total			

Summary for Subcatchment 18S: Visitor Garage

Runoff = 0.55 cfs @ 12.09 hrs, Volume= 0.042 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	27,443	98	Roofs
	27,443		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	40	0.0100	0.84		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	141	0.2000	9.08		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	135	0.0110	5.15	4.05	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
4.5					**Direct Entry, DIRECT**
6.0	316	Total			

Summary for Subcatchment OS-1: OS-1

Runoff = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

Area (sf)	CN	Description
17,031	89	Urban commercial, 85% imp, HSG A
2,555		15.00% Pervious Area
14,476		85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	60	0.0400	0.20		**Sheet Flow, Sheet flow A-B** Grass: Short n= 0.150 P2= 3.00"
0.9	180	0.0250	3.21		**Shallow Concentrated Flow, Gutter Flow B-C (Russell Street)** Paved Kv= 20.3 fps
0.7	80	0.0100	2.03		**Shallow Concentrated Flow, Gutter Flow C-D (Hill Street)** Paved Kv= 20.3 fps
1.1	375	0.0800	5.74		**Shallow Concentrated Flow, Gutter Flow D-E (Ellsworth Street)** Paved Kv= 20.3 fps
2.2	605	0.0500	4.54		**Shallow Concentrated Flow, Gutter Flow E-F (Congress Street)** Paved Kv= 20.3 fps
10.0	1,300	Total			

Summary for Subcatchment OS-2: OS-2

Runoff = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

Area (sf)	CN	Description
50,885	89	Urban commercial, 85% imp, HSG A
7,633		15.00% Pervious Area
43,252		85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	60	0.0400	0.20		**Sheet Flow, Sheet flow A-B** Grass: Short n= 0.150 P2= 3.00"
0.9	180	0.0250	3.21		**Shallow Concentrated Flow, Gutter Flow B-C (Russell Street)** Paved Kv= 20.3 fps
0.7	80	0.0100	2.03		**Shallow Concentrated Flow, Gutter Flow C-D (Hill Street)** Paved Kv= 20.3 fps
1.1	375	0.0800	5.74		**Shallow Concentrated Flow, Gutter Flow D-E (Ellsworth Street)** Paved Kv= 20.3 fps
2.2	605	0.0500	4.54		**Shallow Concentrated Flow, Gutter Flow E-F (Congress Street)** Paved Kv= 20.3 fps
10.0	1,300	Total			

Summary for Reach 2R: Weymouth Street Sewer

Inflow Area = 1.168 ac, 85.00% Impervious, Inflow Depth = 0.28" for 1-Inch event
Inflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af
Outflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Offsite Forest Street

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 15R:

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

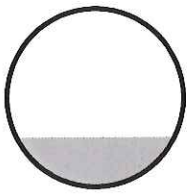
Summary for Reach 110:

Inflow Area = 0.254 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af
Outflow = 0.22 cfs @ 12.10 hrs, Volume= 0.017 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.79 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 0.9 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.31 cfs

8.0" Round Pipe
n= 0.012
Length= 51.0' Slope= 0.0100 '/'
Inlet Invert= 110.51', Outlet Invert= 110.00'



Summary for Reach 115:

Inflow Area = 1.203 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 1.04 cfs @ 12.10 hrs, Volume= 0.079 af
Outflow = 1.02 cfs @ 12.10 hrs, Volume= 0.079 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.73 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 0.9 min

Peak Storage= 19 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.17 cfs

15.0" Round Pipe
n= 0.012
Length= 67.0' Slope= 0.0078 '/'
Inlet Invert= 110.11', Outlet Invert= 109.59'



Summary for Reach 118:

Inflow Area = 1.737 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 1.48 cfs @ 12.10 hrs, Volume= 0.114 af
Outflow = 1.47 cfs @ 12.11 hrs, Volume= 0.114 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.86 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.26 fps, Avg. Travel Time= 0.7 min

Peak Storage= 19 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 20.98 cfs

18.0" Round Pipe
n= 0.012
Length= 90.0' Slope= 0.0340 '/'
Inlet Invert= 109.44', Outlet Invert= 106.38'



Summary for Reach 125:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.46 cfs @ 12.10 hrs, Volume= 0.035 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.10 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 1.0 min

Peak Storage= 9 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.21 cfs

12.0" Round Pipe
n= 0.012
Length= 79.0' Slope= 0.0182 '/'
Inlet Invert= 131.87', Outlet Invert= 130.43'



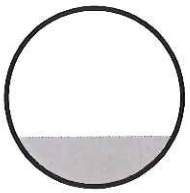
Summary for Reach 128:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.10 hrs, Volume= 0.035 af
Outflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.54 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 1.4 min

Peak Storage= 13 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.67 cfs

12.0" Round Pipe
n= 0.012
Length= 71.0' Slope= 0.0048 '/'
Inlet Invert= 130.40', Outlet Invert= 130.06'



Summary for Reach 135:

Inflow Area = 0.827 ac, 85.62% Impervious, Inflow Depth = 0.32" for 1-Inch event
Inflow = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af
Outflow = 0.28 cfs @ 12.12 hrs, Volume= 0.022 af, Atten= 3%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.13 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.40 fps, Avg. Travel Time= 1.6 min

Peak Storage= 11 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 3.58 cfs

8.0" Round Pipe
n= 0.012
Length= 225.0' Slope= 0.0747 '/'
Inlet Invert= 62.69', Outlet Invert= 45.89'



Summary for Reach 171:

Inflow Area = 0.927 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 0.061 af
Outflow = 0.81 cfs @ 12.09 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.40 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.51 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 29.32 cfs

15.0" Round Pipe
n= 0.012
Length= 31.0' Slope= 0.1755 '/'
Inlet Invert= 57.44', Outlet Invert= 52.00'



Summary for Reach 172:

Inflow Area = 1.557 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 1.35 cfs @ 12.09 hrs, Volume= 0.103 af
Outflow = 1.34 cfs @ 12.09 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.53 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.82 fps, Avg. Travel Time= 0.2 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 27.27 cfs

15.0" Round Pipe
n= 0.012
Length= 38.0' Slope= 0.1518 '/'
Inlet Invert= 51.66', Outlet Invert= 45.89'



Summary for Reach 181:

Inflow Area = 0.630 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 0.042 af
Outflow = 0.54 cfs @ 12.10 hrs, Volume= 0.042 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.81 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.91 fps, Avg. Travel Time= 0.9 min

Peak Storage= 10 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.96 cfs

12.0" Round Pipe
n= 0.012
Length= 104.0' Slope= 0.0425 '/'
Inlet Invert= 56.28', Outlet Invert= 51.86'



Summary for Reach 210:

Inflow Area = 0.579 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.50 cfs @ 12.10 hrs, Volume= 0.038 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.34 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 0.8 min

Peak Storage= 8 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.46 cfs

12.0" Round Pipe
n= 0.012
Length= 66.0' Slope= 0.0200 '/'
Inlet Invert= 122.35', Outlet Invert= 121.03'



Summary for Reach 215:

Inflow Area = 0.371 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af
Outflow = 0.32 cfs @ 12.10 hrs, Volume= 0.024 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 1.1 min

Peak Storage= 7 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.96 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 52.0' Slope= 0.0069 '/'
Inlet Invert= 121.67', Outlet Invert= 121.31'



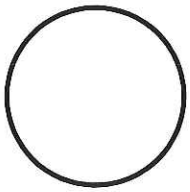
Summary for Reach 216R:

Inflow Area = 3.164 ac, 47.24% Impervious, Inflow Depth = 0.02" for 1-Inch event
Inflow = 0.01 cfs @ 12.52 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.52 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.12 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.27 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 12.52 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 16.96 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 12.0' Slope= 0.2267 '/'
Inlet Invert= 60.11', Outlet Invert= 57.39'



Summary for Reach 220:

Inflow Area = 1.737 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 1.47 cfs @ 12.11 hrs, Volume= 0.114 af
Outflow = 1.42 cfs @ 12.12 hrs, Volume= 0.114 af, Atten= 3%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.18 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.05 fps, Avg. Travel Time= 1.8 min

Peak Storage= 51 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 18.30 cfs

18.0" Round Pipe
n= 0.012
Length= 218.0' Slope= 0.0259 '/'
Inlet Invert= 105.99', Outlet Invert= 100.35'



Summary for Reach 230:

Inflow Area = 2.081 ac, 96.61% Impervious, Inflow Depth = 0.69" for 1-Inch event
Inflow = 1.48 cfs @ 12.12 hrs, Volume= 0.120 af
Outflow = 1.47 cfs @ 12.13 hrs, Volume= 0.120 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.41 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.27 fps, Avg. Travel Time= 0.3 min

Peak Storage= 10 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 49.39 cfs

18.0" Round Pipe
n= 0.012
Length= 87.0' Slope= 0.1884 '/'
Inlet Invert= 100.16', Outlet Invert= 83.77'



Summary for Reach 240:

Inflow Area = 4.951 ac, 86.33% Impervious, Inflow Depth = 0.41" for 1-Inch event
Inflow = 2.00 cfs @ 12.12 hrs, Volume= 0.167 af
Outflow = 1.97 cfs @ 12.13 hrs, Volume= 0.167 af, Atten= 2%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.83 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.43 fps, Avg. Travel Time= 0.4 min

Peak Storage= 15 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.69 cfs

18.0" Round Pipe
n= 0.012
Length= 100.0' Slope= 0.1612 '/'
Inlet Invert= 67.96', Outlet Invert= 51.84'



Summary for Reach 260:

Inflow Area = 4.951 ac, 86.33% Impervious, Inflow Depth = 0.41" for 1-Inch event
Inflow = 1.97 cfs @ 12.13 hrs, Volume= 0.167 af
Outflow = 1.96 cfs @ 12.13 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.28 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.87 fps, Avg. Travel Time= 0.3 min

Peak Storage= 11 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 55.59 cfs

24.0" Round Pipe
n= 0.012
Length= 48.0' Slope= 0.0515 '/'
Inlet Invert= 51.84', Outlet Invert= 49.37'



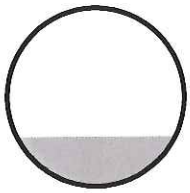
Summary for Reach 410:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.62 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 0.7 min

Peak Storage= 6 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.77 cfs

12.0" Round Pipe
n= 0.012
Length= 35.0' Slope= 0.0051 '/'
Inlet Invert= 110.68', Outlet Invert= 110.50'



Summary for Reach 510:

Inflow Area = 2.870 ac, 78.87% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af
Outflow = 0.52 cfs @ 12.11 hrs, Volume= 0.047 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.95 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.94 fps, Avg. Travel Time= 0.3 min

Peak Storage= 4 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 47.85 cfs

18.0" Round Pipe
n= 0.012
Length= 62.0' Slope= 0.1768 '/'
Inlet Invert= 95.90', Outlet Invert= 84.94'



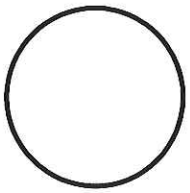
Summary for Reach 810:

Inflow Area = 1.045 ac, 63.76% Impervious, Inflow Depth = 0.05" for 1-Inch event
Inflow = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.47 hrs, Volume= 0.004 af, Atten= 1%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.26 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.35 fps, Avg. Travel Time= 1.5 min

Peak Storage= 1 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 17.81 cfs

12.0" Round Pipe
n= 0.012
Length= 210.0' Slope= 0.2129 '/'
Inlet Invert= 120.21', Outlet Invert= 75.50'



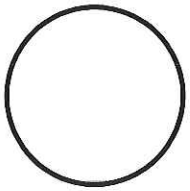
Summary for Reach 820:

Inflow Area = 1.045 ac, 63.76% Impervious, Inflow Depth = 0.05" for 1-Inch event
Inflow = 0.01 cfs @ 12.47 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.50 hrs, Volume= 0.004 af, Atten= 2%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.55 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.82 fps, Avg. Travel Time= 1.5 min

Peak Storage= 1 cf @ 12.48 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 12.32 cfs

12.0" Round Pipe
n= 0.012
Length= 164.0' Slope= 0.1020 '/'
Inlet Invert= 75.58', Outlet Invert= 58.86'



Summary for Pond 2P:

Inflow Area = 0.318 ac, 73.07% Impervious, Inflow Depth = 0.11" for 1-Inch event
Inflow = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af
Outflow = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.2 min
Primary = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 107.03' @ 12.16 hrs Surf.Area= 13 sf Storage= 0 cf

Plug-Flow detention time= 0.3 min calculated for 0.003 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (928.3 - 928.0)

Volume	Invert	Avail.Storage	Storage Description
#1	107.00'	169 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
107.00	13	0	0
120.00	13	169	169

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 107.00' / 106.50' S= 0.0100 '/' Cc= 0.900
n= 0.011, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.16 hrs HW=107.03' (Free Discharge)
1=Culvert (Barrel Controls 0.00 cfs @ 0.81 fps)

Summary for Pond 3P:

Inflow Area = 0.344 ac, 79.46% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.06 cfs @ 12.11 hrs, Volume= 0.006 af
Primary = 0.06 cfs @ 12.11 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 5P:

Inflow Area = 2.870 ac, 78.87% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af
Primary = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 6P:

Inflow Area = 0.254 ac, 79.41% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af
Primary = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 7P:

Inflow Area = 2.119 ac, 39.10% Impervious, Inflow Depth = 0.00" for 1-Inch event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 8P:

Inflow Area = 1.045 ac, 63.76% Impervious, Inflow Depth = 0.05" for 1-Inch event
Inflow = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af
Primary = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 10P:

Inflow Area = 1.389 ac, 57.14% Impervious, Inflow Depth = 0.30" for 1-Inch event
Inflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af
Primary = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 11P:

Inflow Area = 0.254 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af
Primary = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 12P:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Primary = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 13.5P: CB 13796

Inflow Area = 0.683 ac, 49.37% Impervious, Inflow Depth = 0.00" for 1-Inch event
Inflow = 0.00 cfs @ 23.95 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 23.95 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 23.95 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 42.50' @ 23.95 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	38.86'	**10.0" Round 12" SD** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 38.86' / 37.64' S= 0.0813 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	42.50'	**2.0' long Curb Inlet** 2 End Contraction(s)
#3	Secondary	43.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 23.95 hrs HW=42.50' (Free Discharge)
↑—**1=12" SD** (Passes 0.00 cfs of 4.72 cfs potential flow)
↑—**2=Curb Inlet** (Weir Controls 0.00 cfs @ 0.06 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=38.86' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 13P: CB at Parking Garage Entrance

Inflow Area =	0.827 ac, 85.62% Impervious,	Inflow Depth =	0.32"	for 1-Inch event
Inflow =	0.29 cfs @ 12.10 hrs,	Volume=	0.022 af	
Outflow =	0.29 cfs @ 12.10 hrs,	Volume=	0.022 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.29 cfs @ 12.10 hrs,	Volume=	0.022 af	
Secondary =	0.00 cfs @ 0.00 hrs,	Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 66.03' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	66.00'	**1.0" x 3.0" Horiz. Grate X 24.00** C= 0.600 Limited to weir flow at low heads
#2	Secondary	66.20'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.28 cfs @ 12.10 hrs HW=66.03' (Free Discharge)
↑—**1=Grate** (Weir Controls 0.28 cfs @ 0.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond CB-63:

Inflow Area =	3.164 ac, 47.24% Impervious,	Inflow Depth =	0.02"	for 1-Inch event
Inflow =	0.01 cfs @ 12.50 hrs,	Volume=	0.004 af	
Outflow =	0.01 cfs @ 12.52 hrs,	Volume=	0.004 af,	Atten= 0%, Lag= 0.8 min
Primary =	0.01 cfs @ 12.52 hrs,	Volume=	0.004 af	

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 59.84' @ 12.52 hrs Surf.Area= 13 sf Storage= 1 cf

Plug-Flow detention time= 0.8 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,000.9 - 1,000.1)

Volume	Invert	Avail.Storage	Storage Description
#1	59.80'	81 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.80	13	0	0
66.00	13	81	81

Device	Routing	Invert	Outlet Devices
#1	Primary	59.80'	**12.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 59.80' / 58.46' S= 0.1340 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.01 cfs @ 12.52 hrs HW=59.84' (Free Discharge)
1=Culvert (Inlet Controls 0.01 cfs @ 0.71 fps)

Summary for Pond DMH 20:

Inflow Area = 1.316 ac, 52.96% Impervious, Inflow Depth = 0.01" for 1-Inch event
Inflow = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 37.61' @ 15.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.59'	**12.0" Round 12" SD** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.59' / 35.00' S= 0.1295 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 15.12 hrs HW=37.61' (Free Discharge)
1=12" SD (Inlet Controls 0.00 cfs @ 0.45 fps)

Summary for Pond hil-01:

Inflow Area = 0.630 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 0.042 af
Primary = 0.55 cfs @ 12.09 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond hil-02:

Inflow Area = 4.951 ac, 86.33% Impervious, Inflow Depth = 0.41" for 1-Inch event
Inflow = 1.97 cfs @ 12.13 hrs, Volume= 0.167 af
Primary = 1.97 cfs @ 12.13 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond OS-1.: CB

Inflow Area = 0.391 ac, 85.00% Impervious, Inflow Depth = 0.28" for 1-Inch event
Inflow = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af
Outflow = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 55.05' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	45.00'	**8.0" Round Stormdrain** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.44' S= 0.0373 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	55.00'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Secondary	55.20'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.07 cfs @ 12.16 hrs HW=55.05' (Free Discharge)
↑—**1=Stormdrain** (Passes 0.07 cfs of 5.24 cfs potential flow)
↑—**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.07 cfs @ 0.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=45.00' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond OS-2.: CB 16258

Inflow Area = 1.168 ac, 85.00% Impervious, Inflow Depth = 0.28" for 1-Inch event
Inflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af
Outflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 83.13' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	79.02'	**8.0" Round Stormdrain** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.02' / 78.25' S= 0.0220 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	83.00'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Secondary	83.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.30 cfs @ 12.16 hrs HW=83.13' (Free Discharge)
↑**1=Stormdrain** (Passes 0.30 cfs of 3.12 cfs potential flow)
↑**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.30 cfs @ 1.18 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=79.02' (Free Discharge)
↑**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond SMH 1: esmh-13952

Inflow Area = 2.384 ac, 95.01% Impervious, Inflow Depth = 0.63" for 1-Inch event
Inflow = 1.61 cfs @ 12.10 hrs, Volume= 0.125 af
Outflow = 1.61 cfs @ 12.10 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min
Primary = 1.61 cfs @ 12.10 hrs, Volume= 0.125 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 45.19' @ 12.10 hrs
Flood Elev= 52.64'

Device	Routing	Invert	Outlet Devices
#1	Primary	44.61'	**18.0" Round Sewer** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.61' / 41.64' S= 0.0660 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=1.60 cfs @ 12.10 hrs HW=45.18' (Free Discharge)
↑**1=Sewer** (Inlet Controls 1.60 cfs @ 2.58 fps)

Summary for Pond SMH-13932: esmh-13932

Inflow Area = 2.775 ac, 93.60% Impervious, Inflow Depth = 0.58" for 1-Inch event
Inflow = 1.70 cfs @ 12.10 hrs, Volume= 0.134 af
Outflow = 1.70 cfs @ 12.10 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min
Primary = 1.70 cfs @ 12.10 hrs, Volume= 0.134 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 41.23' @ 12.10 hrs
Flood Elev= 52.64'

Device	Routing	Invert	Outlet Devices
#1	Primary	40.64'	**18.0" Round Sewer** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 40.64' / 38.00' S= 0.0587 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=1.70 cfs @ 12.10 hrs HW=41.23' (Free Discharge)
↑**1=Sewer** (Inlet Controls 1.70 cfs @ 2.62 fps)

Summary for Pond SMH-20:

Inflow Area = 1.557 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 1.35 cfs @ 12.09 hrs, Volume= 0.103 af
Primary = 1.35 cfs @ 12.09 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C1:

Inflow Area = 0.765 ac, 73.26% Impervious, Inflow Depth = 0.11" for 1-Inch event
Inflow = 0.05 cfs @ 12.16 hrs, Volume= 0.007 af
Primary = 0.05 cfs @ 12.16 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C2:

Inflow Area = 2.775 ac, 93.60% Impervious, Inflow Depth = 0.58" for 1-Inch event
Inflow = 1.70 cfs @ 12.10 hrs, Volume= 0.134 af
Primary = 1.70 cfs @ 12.10 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C3:

Inflow Area = 1.316 ac, 52.96% Impervious, Inflow Depth = 0.01" for 1-Inch event
Inflow = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af
Primary = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C4:

Inflow Area = 8.370 ac, 71.34% Impervious, Inflow Depth = 0.25" for 1-Inch event
Inflow = 2.00 cfs @ 12.13 hrs, Volume= 0.176 af
Primary = 2.00 cfs @ 12.13 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C5:

Inflow Area = 1.389 ac, 57.14% Impervious, Inflow Depth = 0.30" for 1-Inch event
Inflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af
Primary = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=1.46"
Flow Length=229' Tc=6.0 min CN=82 Runoff=0.75 cfs 0.054 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.70 cfs 0.138 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=1.46"
Flow Length=284' Tc=6.0 min CN=82 Runoff=0.53 cfs 0.039 af

Subcatchment2S: Runoff Area=16,157 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=244' Tc=6.0 min CN=98 Runoff=1.09 cfs 0.089 af

Subcatchment3S: Runoff Area=14,974 sf 79.46% Impervious Runoff Depth=1.75"
Flow Length=358' Tc=6.0 min CN=86 Runoff=0.69 cfs 0.050 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.57 cfs 0.128 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=1.75"
Flow Length=510' Tc=6.0 min CN=86 Runoff=5.77 cfs 0.418 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=1.75"
Flow Length=121' Tc=6.0 min CN=86 Runoff=0.51 cfs 0.037 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=0.55"
Flow Length=634' Tc=6.0 min CN=65 Runoff=1.03 cfs 0.098 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=1.14"
Flow Length=399' Tc=6.0 min CN=77 Runoff=1.33 cfs 0.099 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=0.28"
Flow Length=326' Tc=6.0 min CN=57 Runoff=0.11 cfs 0.020 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=0.74 cfs 0.061 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=200' Tc=6.0 min CN=98 Runoff=1.57 cfs 0.128 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=2.08"
Flow Length=196' Tc=6.2 min CN=90 Runoff=1.94 cfs 0.143 af

Subcatchment14S: Runoff Area=29,743 sf 49.37% Impervious Runoff Depth=0.68"
Flow Length=262' Tc=6.0 min CN=68 Runoff=0.45 cfs 0.039 af

Subcatchment15S: Runoff Area=27,590 sf 56.84% Impervious Runoff Depth=0.92"
Flow Length=384' Tc=6.0 min CN=73 Runoff=0.62 cfs 0.049 af

Subcatchment 17S: Runoff Area=40,392 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=188' Tc=6.0 min CN=98 Runoff=2.72 cfs 0.222 af

Subcatchment 18S: Visitor Garage Runoff Area=27,443 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=316' Tc=6.0 min CN=98 Runoff=1.85 cfs 0.151 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=1.99"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=0.78 cfs 0.065 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=1.99"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=2.34 cfs 0.194 af

Reach 2R: Weymouth Street Sewer Inflow=2.28 cfs 0.194 af
Outflow=2.28 cfs 0.194 af

Reach 3R: Offsite Forest Street Inflow=0.13 cfs 0.001 af
Outflow=0.13 cfs 0.001 af

Reach 15R: Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach 110: Avg. Flow Depth=0.36' Max Vel=3.87 fps Inflow=0.74 cfs 0.061 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=0.74 cfs 0.061 af

Reach 115: Avg. Flow Depth=0.68' Max Vel=5.19 fps Inflow=3.51 cfs 0.288 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=3.48 cfs 0.288 af

Reach 118: Avg. Flow Depth=0.50' Max Vel=9.76 fps Inflow=5.04 cfs 0.415 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=5.01 cfs 0.415 af

Reach 125: Avg. Flow Depth=0.38' Max Vel=5.80 fps Inflow=1.57 cfs 0.128 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=1.56 cfs 0.128 af

Reach 128: Avg. Flow Depth=0.55' Max Vel=3.53 fps Inflow=1.56 cfs 0.128 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=1.54 cfs 0.128 af

Reach 135: Avg. Flow Depth=0.28' Max Vel=9.40 fps Inflow=1.29 cfs 0.136 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=1.28 cfs 0.136 af

Reach 171: Avg. Flow Depth=0.26' Max Vel=14.91 fps Inflow=2.72 cfs 0.222 af
15.0" Round Pipe n=0.012 L=31.0' S=0.1755 '/' Capacity=29.32 cfs Outflow=2.72 cfs 0.222 af

Reach 172: Avg. Flow Depth=0.35' Max Vel=16.46 fps Inflow=4.56 cfs 0.372 af
15.0" Round Pipe n=0.012 L=38.0' S=0.1518 '/' Capacity=27.27 cfs Outflow=4.55 cfs 0.372 af

Reach 181: Avg. Flow Depth=0.33' Max Vel=8.24 fps Inflow=1.85 cfs 0.151 af
12.0" Round Pipe n=0.012 L=104.0' S=0.0425 '/' Capacity=7.96 cfs Outflow=1.84 cfs 0.151 af

Reach 210: Avg. Flow Depth=0.38' Max Vel=6.13 fps Inflow=1.70 cfs 0.138 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=1.69 cfs 0.138 af

Reach 215: Avg. Flow Depth=0.42' Max Vel=3.48 fps Inflow=1.09 cfs 0.089 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=1.08 cfs 0.089 af

Reach 216R: Avg. Flow Depth=0.25' Max Vel=15.09 fps Inflow=2.33 cfs 0.197 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=2.33 cfs 0.197 af

Reach 220: Avg. Flow Depth=0.54' Max Vel=8.82 fps Inflow=5.01 cfs 0.415 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=4.91 cfs 0.415 af

Reach 230: Avg. Flow Depth=0.34' Max Vel=18.51 fps Inflow=5.59 cfs 0.465 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=5.57 cfs 0.465 af

Reach 240: Avg. Flow Depth=0.51' Max Vel=21.42 fps Inflow=11.29 cfs 0.883 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=11.25 cfs 0.883 af

Reach 260: Avg. Flow Depth=0.61' Max Vel=13.86 fps Inflow=11.25 cfs 0.883 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=11.22 cfs 0.883 af

Reach 410: Avg. Flow Depth=0.54' Max Vel=3.63 fps Inflow=1.57 cfs 0.128 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=1.56 cfs 0.128 af

Reach 510: Avg. Flow Depth=0.35' Max Vel=18.27 fps Inflow=5.77 cfs 0.418 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=5.76 cfs 0.418 af

Reach 810: Avg. Flow Depth=0.19' Max Vel=13.33 fps Inflow=1.33 cfs 0.099 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=1.32 cfs 0.099 af

Reach 820: Avg. Flow Depth=0.22' Max Vel=10.22 fps Inflow=1.32 cfs 0.099 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=1.30 cfs 0.099 af

Pond 2P: Peak Elev=107.31' Storage=4 cf Inflow=0.53 cfs 0.039 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=0.53 cfs 0.039 af

Pond 3P: Inflow=0.69 cfs 0.050 af
Primary=0.69 cfs 0.050 af

Pond 5P: Inflow=5.77 cfs 0.418 af
Primary=5.77 cfs 0.418 af

Pond 6P: Inflow=0.51 cfs 0.037 af
Primary=0.51 cfs 0.037 af

Pond 7P: Inflow=1.03 cfs 0.098 af
Primary=1.03 cfs 0.098 af

Pond 8P: Inflow=1.33 cfs 0.099 af
Primary=1.33 cfs 0.099 af

Pond 10P: Inflow=1.60 cfs 0.147 af
Primary=1.60 cfs 0.147 af

Pond 11P: Inflow=0.74 cfs 0.061 af
Primary=0.74 cfs 0.061 af

Pond 12P: Inflow=1.57 cfs 0.128 af
Primary=1.57 cfs 0.128 af

Pond 13.5P: CB 13796 Peak Elev=42.81' Inflow=1.10 cfs 0.045 af
Primary=1.10 cfs 0.045 af Secondary=0.00 cfs 0.000 af Outflow=1.10 cfs 0.045 af

Pond 13P: CB at Parking Garage Entrance Peak Elev=66.29' Inflow=1.94 cfs 0.143 af
Primary=1.29 cfs 0.136 af Secondary=0.65 cfs 0.007 af Outflow=1.94 cfs 0.143 af

Pond CB-63: Peak Elev=60.68' Storage=11 cf Inflow=2.33 cfs 0.197 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=2.33 cfs 0.197 af

Pond DMH 20: Peak Elev=38.30' Inflow=1.72 cfs 0.094 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=1.72 cfs 0.094 af

Pond hil-01: Inflow=1.85 cfs 0.151 af
Primary=1.85 cfs 0.151 af

Pond hil-02: Inflow=11.25 cfs 0.883 af
Primary=11.25 cfs 0.883 af

Pond OS-1.: CB Peak Elev=55.22' Inflow=0.78 cfs 0.065 af
Primary=0.65 cfs 0.064 af Secondary=0.13 cfs 0.001 af Outflow=0.78 cfs 0.065 af

Pond OS-2.: CB 16258 Peak Elev=83.51' Inflow=2.34 cfs 0.194 af
Primary=2.28 cfs 0.194 af Secondary=0.06 cfs 0.000 af Outflow=2.34 cfs 0.194 af

Pond SMH 1: esmh-13952 Peak Elev=45.84' Inflow=5.83 cfs 0.509 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0660 '/' Outflow=5.83 cfs 0.509 af

Pond SMH-13932: esmh-13932 Peak Elev=41.96' Inflow=6.45 cfs 0.572 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=6.45 cfs 0.572 af

Pond SMH-20: Inflow=4.56 cfs 0.372 af
Primary=4.56 cfs 0.372 af

Link SP-C1: Inflow=1.28 cfs 0.093 af
Primary=1.28 cfs 0.093 af

Link SP-C2: Inflow=6.45 cfs 0.572 af
Primary=6.45 cfs 0.572 af

Link SP-C3: Inflow=1.72 cfs 0.094 af
Primary=1.72 cfs 0.094 af

Link SP-C4: Inflow=14.04 cfs 1.117 af
Primary=14.04 cfs 1.117 af

Link SP-C5:

Inflow=1.60 cfs 0.147 af
Primary=1.60 cfs 0.147 af

Total Runoff Area = 15.783 ac Runoff Volume = 2.219 af Average Runoff Depth = 1.69"
26.42% Pervious = 4.170 ac 73.58% Impervious = 11.613 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=2.72"
Flow Length=229' Tc=6.0 min CN=82 Runoff=1.40 cfs 0.101 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=2.54 cfs 0.211 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=2.72"
Flow Length=284' Tc=6.0 min CN=82 Runoff=1.00 cfs 0.072 af

Subcatchment2S: Runoff Area=16,157 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=244' Tc=6.0 min CN=98 Runoff=1.63 cfs 0.135 af

Subcatchment3S: Runoff Area=14,974 sf 79.46% Impervious Runoff Depth=3.10"
Flow Length=358' Tc=6.0 min CN=86 Runoff=1.21 cfs 0.089 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=2.34 cfs 0.194 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=3.10"
Flow Length=510' Tc=6.0 min CN=86 Runoff=10.09 cfs 0.740 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=3.10"
Flow Length=121' Tc=6.0 min CN=86 Runoff=0.89 cfs 0.066 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=1.39"
Flow Length=634' Tc=6.0 min CN=65 Runoff=3.18 cfs 0.246 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=2.29"
Flow Length=399' Tc=6.0 min CN=77 Runoff=2.75 cfs 0.200 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=0.90"
Flow Length=326' Tc=6.0 min CN=57 Runoff=0.71 cfs 0.064 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.11 cfs 0.092 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=200' Tc=6.0 min CN=98 Runoff=2.34 cfs 0.194 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=3.49"
Flow Length=196' Tc=6.2 min CN=90 Runoff=3.19 cfs 0.241 af

Subcatchment14S: Runoff Area=29,743 sf 49.37% Impervious Runoff Depth=1.60"
Flow Length=262' Tc=6.0 min CN=68 Runoff=1.21 cfs 0.091 af

Subcatchment15S: Runoff Area=27,590 sf 56.84% Impervious Runoff Depth=1.97"
Flow Length=384' Tc=6.0 min CN=73 Runoff=1.42 cfs 0.104 af

Subcatchment 17S: Runoff Area=40,392 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=188' Tc=6.0 min CN=98 Runoff=4.07 cfs 0.337 af

Subcatchment 18S: Visitor Garage Runoff Area=27,443 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=316' Tc=6.0 min CN=98 Runoff=2.77 cfs 0.229 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=3.39"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=1.31 cfs 0.110 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=3.39"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=3.92 cfs 0.330 af

Reach 2R: Weymouth Street Sewer Inflow=2.95 cfs 0.318 af
Outflow=2.95 cfs 0.318 af

Reach 3R: Offsite Forest Street Inflow=0.46 cfs 0.008 af
Outflow=0.46 cfs 0.008 af

Reach 15R: Inflow=0.81 cfs 0.006 af
Outflow=0.81 cfs 0.006 af

Reach 110: Avg. Flow Depth=0.47' Max Vel=4.21 fps Inflow=1.11 cfs 0.092 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=1.11 cfs 0.092 af

Reach 115: Avg. Flow Depth=0.89' Max Vel=5.64 fps Inflow=5.25 cfs 0.438 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=5.21 cfs 0.438 af

Reach 118: Avg. Flow Depth=0.62' Max Vel=10.90 fps Inflow=7.54 cfs 0.632 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=7.50 cfs 0.632 af

Reach 125: Avg. Flow Depth=0.47' Max Vel=6.45 fps Inflow=2.34 cfs 0.194 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=2.33 cfs 0.194 af

Reach 128: Avg. Flow Depth=0.72' Max Vel=3.83 fps Inflow=2.33 cfs 0.194 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=2.30 cfs 0.194 af

Reach 135: Avg. Flow Depth=0.31' Max Vel=9.87 fps Inflow=1.55 cfs 0.215 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=1.54 cfs 0.215 af

Reach 171: Avg. Flow Depth=0.31' Max Vel=16.76 fps Inflow=4.07 cfs 0.337 af
15.0" Round Pipe n=0.012 L=31.0' S=0.1755 '/' Capacity=29.32 cfs Outflow=4.07 cfs 0.337 af

Reach 172: Avg. Flow Depth=0.43' Max Vel=18.44 fps Inflow=6.81 cfs 0.566 af
15.0" Round Pipe n=0.012 L=38.0' S=0.1518 '/' Capacity=27.27 cfs Outflow=6.81 cfs 0.566 af

Reach 181: Avg. Flow Depth=0.41' Max Vel=9.21 fps Inflow=2.77 cfs 0.229 af
12.0" Round Pipe n=0.012 L=104.0' S=0.0425 '/' Capacity=7.96 cfs Outflow=2.75 cfs 0.229 af

Reach 210: Avg. Flow Depth=0.48' Max Vel=6.82 fps Inflow=2.54 cfs 0.211 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=2.53 cfs 0.211 af

Reach 215: Avg. Flow Depth=0.53' Max Vel=3.86 fps Inflow=1.63 cfs 0.135 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=1.62 cfs 0.135 af

Reach 216R: Avg. Flow Depth=0.41' Max Vel=19.62 fps Inflow=5.88 cfs 0.446 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=5.87 cfs 0.446 af

Reach 220: Avg. Flow Depth=0.67' Max Vel=9.84 fps Inflow=7.50 cfs 0.632 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=7.37 cfs 0.632 af

Reach 230: Avg. Flow Depth=0.42' Max Vel=20.94 fps Inflow=8.56 cfs 0.720 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=8.53 cfs 0.720 af

Reach 240: Avg. Flow Depth=0.67' Max Vel=24.51 fps Inflow=18.55 cfs 1.461 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=18.50 cfs 1.461 af

Reach 260: Avg. Flow Depth=0.79' Max Vel=15.91 fps Inflow=18.50 cfs 1.461 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=18.46 cfs 1.461 af

Reach 410: Avg. Flow Depth=0.71' Max Vel=3.95 fps Inflow=2.34 cfs 0.194 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=2.33 cfs 0.194 af

Reach 510: Avg. Flow Depth=0.47' Max Vel=21.44 fps Inflow=10.09 cfs 0.740 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=10.08 cfs 0.740 af

Reach 810: Avg. Flow Depth=0.27' Max Vel=16.46 fps Inflow=2.75 cfs 0.200 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=2.73 cfs 0.200 af

Reach 820: Avg. Flow Depth=0.32' Max Vel=12.61 fps Inflow=2.73 cfs 0.200 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=2.70 cfs 0.200 af

Pond 2P: Peak Elev=107.44' Storage=6 cf Inflow=1.00 cfs 0.072 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=1.00 cfs 0.072 af

Pond 3P: Inflow=1.21 cfs 0.089 af
Primary=1.21 cfs 0.089 af

Pond 5P: Inflow=10.09 cfs 0.740 af
Primary=10.09 cfs 0.740 af

Pond 6P: Inflow=0.89 cfs 0.066 af
Primary=0.89 cfs 0.066 af

Pond 7P: Inflow=3.18 cfs 0.246 af
Primary=3.18 cfs 0.246 af

Pond 8P: Inflow=2.75 cfs 0.200 af
Primary=2.75 cfs 0.200 af

Pond 10P: Inflow=3.01 cfs 0.258 af
Primary=3.01 cfs 0.258 af

Pond 11P: Inflow=1.11 cfs 0.092 af
Primary=1.11 cfs 0.092 af

Pond 12P: Inflow=2.34 cfs 0.194 af
Primary=2.34 cfs 0.194 af

Pond 13.5P: CB 13796 Peak Elev=43.10' Inflow=3.67 cfs 0.129 af
Primary=2.86 cfs 0.123 af Secondary=0.81 cfs 0.006 af Outflow=3.67 cfs 0.129 af

Pond 13P: CB at Parking Garage Entrance Peak Elev=66.41' Inflow=4.01 cfs 0.253 af
Primary=1.55 cfs 0.215 af Secondary=2.47 cfs 0.038 af Outflow=4.01 cfs 0.253 af

Pond CB-63: Peak Elev=62.71' Storage=38 cf Inflow=5.88 cfs 0.446 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=5.88 cfs 0.446 af

Pond DMH 20: Peak Elev=39.37' Inflow=4.28 cfs 0.227 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=4.28 cfs 0.227 af

Pond hil-01: Inflow=2.77 cfs 0.229 af
Primary=2.77 cfs 0.229 af

Pond hil-02: Inflow=18.50 cfs 1.461 af
Primary=18.50 cfs 1.461 af

Pond OS-1.: CB Peak Elev=55.26' Inflow=1.31 cfs 0.110 af
Primary=0.85 cfs 0.102 af Secondary=0.46 cfs 0.008 af Outflow=1.31 cfs 0.110 af

Pond OS-2.: CB 16258 Peak Elev=83.61' Inflow=3.92 cfs 0.330 af
Primary=2.95 cfs 0.318 af Secondary=0.97 cfs 0.013 af Outflow=3.92 cfs 0.330 af

Pond SMH 1: esmh-13952 Peak Elev=46.32' Inflow=8.33 cfs 0.781 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0660 '/' Outflow=8.33 cfs 0.781 af

Pond SMH-13932: esmh-13932 Peak Elev=42.54' Inflow=9.14 cfs 0.884 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=9.14 cfs 0.884 af

Pond SMH-20: Inflow=6.81 cfs 0.566 af
Primary=6.81 cfs 0.566 af

Link SP-C1: Inflow=2.39 cfs 0.174 af
Primary=2.39 cfs 0.174 af

Link SP-C2: Inflow=9.14 cfs 0.884 af
Primary=9.14 cfs 0.884 af

Link SP-C3: Inflow=4.28 cfs 0.227 af
Primary=4.28 cfs 0.227 af

Link SP-C4: Inflow=25.22 cfs 1.972 af
Primary=25.22 cfs 1.972 af

Link SP-C5:

Inflow=3.01 cfs 0.258 af
Primary=3.01 cfs 0.258 af

Total Runoff Area = 15.783 ac Runoff Volume = 3.847 af Average Runoff Depth = 2.92"
26.42% Pervious = 4.170 ac 73.58% Impervious = 11.613 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=3.80"
Flow Length=229' Tc=6.0 min CN=82 Runoff=1.93 cfs 0.141 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=3.21 cfs 0.268 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=3.80"
Flow Length=284' Tc=6.0 min CN=82 Runoff=1.38 cfs 0.101 af

Subcatchment2S: Runoff Area=16,157 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=244' Tc=6.0 min CN=98 Runoff=2.06 cfs 0.172 af

Subcatchment3S: Runoff Area=14,974 sf 79.46% Impervious Runoff Depth=4.22"
Flow Length=358' Tc=6.0 min CN=86 Runoff=1.63 cfs 0.121 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=2.96 cfs 0.247 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=4.22"
Flow Length=510' Tc=6.0 min CN=86 Runoff=13.59 cfs 1.009 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=4.22"
Flow Length=121' Tc=6.0 min CN=86 Runoff=1.20 cfs 0.089 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=2.21"
Flow Length=634' Tc=6.0 min CN=65 Runoff=5.25 cfs 0.390 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=3.31"
Flow Length=399' Tc=6.0 min CN=77 Runoff=3.97 cfs 0.288 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=1.56"
Flow Length=326' Tc=6.0 min CN=57 Runoff=1.39 cfs 0.111 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.41 cfs 0.118 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=200' Tc=6.0 min CN=98 Runoff=2.96 cfs 0.248 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=4.65"
Flow Length=196' Tc=6.2 min CN=90 Runoff=4.19 cfs 0.320 af

Subcatchment14S: Runoff Area=29,743 sf 49.37% Impervious Runoff Depth=2.47"
Flow Length=262' Tc=6.0 min CN=68 Runoff=1.92 cfs 0.140 af

Subcatchment15S: Runoff Area=27,590 sf 56.84% Impervious Runoff Depth=2.92"
Flow Length=384' Tc=6.0 min CN=73 Runoff=2.13 cfs 0.154 af

Subcatchment 17S: Runoff Area=40,392 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=188' Tc=6.0 min CN=98 Runoff=5.15 cfs 0.430 af

Subcatchment 18S: Visitor Garage Runoff Area=27,443 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=316' Tc=6.0 min CN=98 Runoff=3.50 cfs 0.292 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=4.54"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=1.73 cfs 0.148 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=4.54"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=5.17 cfs 0.442 af

Reach 2R: Weymouth Street Sewer Inflow=3.31 cfs 0.412 af
Outflow=3.31 cfs 0.412 af

Reach 3R: Offsite Forest Street Inflow=0.73 cfs 0.016 af
Outflow=0.73 cfs 0.016 af

Reach 15R: Inflow=2.41 cfs 0.027 af
Outflow=2.41 cfs 0.027 af

Reach 110: Avg. Flow Depth=0.61' Max Vel=4.27 fps Inflow=1.41 cfs 0.118 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=1.39 cfs 0.118 af

Reach 115: Avg. Flow Depth=1.15' Max Vel=5.72 fps Inflow=6.64 cfs 0.558 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=6.57 cfs 0.558 af

Reach 118: Avg. Flow Depth=0.71' Max Vel=11.58 fps Inflow=9.50 cfs 0.805 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=9.46 cfs 0.805 af

Reach 125: Avg. Flow Depth=0.54' Max Vel=6.84 fps Inflow=2.96 cfs 0.248 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=2.95 cfs 0.248 af

Reach 128: Avg. Flow Depth=1.00' Max Vel=3.87 fps Inflow=2.95 cfs 0.248 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=2.79 cfs 0.248 af

Reach 135: Avg. Flow Depth=0.32' Max Vel=10.11 fps Inflow=1.70 cfs 0.273 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=1.69 cfs 0.273 af

Reach 171: Avg. Flow Depth=0.35' Max Vel=17.93 fps Inflow=5.15 cfs 0.430 af
15.0" Round Pipe n=0.012 L=31.0' S=0.1755 '/' Capacity=29.32 cfs Outflow=5.14 cfs 0.430 af

Reach 172: Avg. Flow Depth=0.48' Max Vel=19.67 fps Inflow=8.62 cfs 0.722 af
15.0" Round Pipe n=0.012 L=38.0' S=0.1518 '/' Capacity=27.27 cfs Outflow=8.61 cfs 0.722 af

Reach 181: Avg. Flow Depth=0.46' Max Vel=9.79 fps Inflow=3.50 cfs 0.292 af
12.0" Round Pipe n=0.012 L=104.0' S=0.0425 '/' Capacity=7.96 cfs Outflow=3.48 cfs 0.292 af

Reach 210: Avg. Flow Depth=0.55' Max Vel=7.22 fps Inflow=3.21 cfs 0.268 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=3.20 cfs 0.268 af

Reach 215: Avg. Flow Depth=0.61' Max Vel=4.07 fps Inflow=2.06 cfs 0.172 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=2.04 cfs 0.172 af

Reach 216R: Avg. Flow Depth=0.52' Max Vel=22.00 fps Inflow=9.15 cfs 0.678 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=9.15 cfs 0.678 af

Reach 220: Avg. Flow Depth=0.76' Max Vel=10.44 fps Inflow=9.46 cfs 0.805 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=9.32 cfs 0.805 af

Reach 230: Avg. Flow Depth=0.48' Max Vel=22.44 fps Inflow=10.92 cfs 0.926 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=10.89 cfs 0.926 af

Reach 240: Avg. Flow Depth=0.78' Max Vel=26.27 fps Inflow=24.37 cfs 1.935 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=24.31 cfs 1.935 af

Reach 260: Avg. Flow Depth=0.93' Max Vel=17.11 fps Inflow=24.31 cfs 1.935 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=24.27 cfs 1.935 af

Reach 410: Avg. Flow Depth=0.90' Max Vel=4.02 fps Inflow=2.96 cfs 0.247 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=2.94 cfs 0.247 af

Reach 510: Avg. Flow Depth=0.55' Max Vel=23.28 fps Inflow=13.59 cfs 1.009 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=13.57 cfs 1.009 af

Reach 810: Avg. Flow Depth=0.32' Max Vel=18.26 fps Inflow=3.97 cfs 0.288 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=3.94 cfs 0.288 af

Reach 820: Avg. Flow Depth=0.39' Max Vel=13.96 fps Inflow=3.94 cfs 0.288 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=3.91 cfs 0.288 af

Pond 2P: Peak Elev=107.53' Storage=7 cf Inflow=1.38 cfs 0.101 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=1.38 cfs 0.101 af

Pond 3P: Inflow=1.63 cfs 0.121 af
Primary=1.63 cfs 0.121 af

Pond 5P: Inflow=13.59 cfs 1.009 af
Primary=13.59 cfs 1.009 af

Pond 6P: Inflow=1.20 cfs 0.089 af
Primary=1.20 cfs 0.089 af

Pond 7P: Inflow=5.25 cfs 0.390 af
Primary=5.25 cfs 0.390 af

Pond 8P: Inflow=3.97 cfs 0.288 af
Primary=3.97 cfs 0.288 af

Pond 10P: Inflow=4.07 cfs 0.358 af
Primary=4.07 cfs 0.358 af

Pond 11P: Inflow=1.41 cfs 0.118 af
Primary=1.41 cfs 0.118 af

Pond 12P: Inflow=2.96 cfs 0.248 af
Primary=2.96 cfs 0.248 af

Pond 13.5P: CB 13796 Peak Elev=43.21' Inflow=6.05 cfs 0.218 af
Primary=3.64 cfs 0.190 af Secondary=2.41 cfs 0.027 af Outflow=6.05 cfs 0.218 af

Pond 13P: CB at Parking Garage Entrance Peak Elev=66.50' Inflow=5.84 cfs 0.351 af
Primary=1.70 cfs 0.273 af Secondary=4.14 cfs 0.077 af Outflow=5.84 cfs 0.351 af

Pond CB-63: Peak Elev=66.15' Storage=81 cf Inflow=9.16 cfs 0.678 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=9.15 cfs 0.678 af

Pond DMH 20: Peak Elev=40.41' Inflow=5.76 cfs 0.345 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=5.76 cfs 0.345 af

Pond hil-01: Inflow=3.50 cfs 0.292 af
Primary=3.50 cfs 0.292 af

Pond hil-02: Inflow=24.31 cfs 1.935 af
Primary=24.31 cfs 1.935 af

Pond OS-1.: CB Peak Elev=55.29' Inflow=1.73 cfs 0.148 af
Primary=1.00 cfs 0.132 af Secondary=0.73 cfs 0.016 af Outflow=1.73 cfs 0.148 af

Pond OS-2.: CB 16258 Peak Elev=83.68' Inflow=5.17 cfs 0.442 af
Primary=3.31 cfs 0.412 af Secondary=1.86 cfs 0.030 af Outflow=5.17 cfs 0.442 af

Pond SMH 1: esmh-13952 Peak Elev=46.82' Inflow=10.28 cfs 0.995 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0660 '/' Outflow=10.28 cfs 0.995 af

Pond SMH-13932: esmh-13932 Peak Elev=43.13' Inflow=11.23 cfs 1.128 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=11.23 cfs 1.128 af

Pond SMH-20: Inflow=8.62 cfs 0.722 af
Primary=8.62 cfs 0.722 af

Link SP-C1: Inflow=3.31 cfs 0.242 af
Primary=3.31 cfs 0.242 af

Link SP-C2: Inflow=11.23 cfs 1.128 af
Primary=11.23 cfs 1.128 af

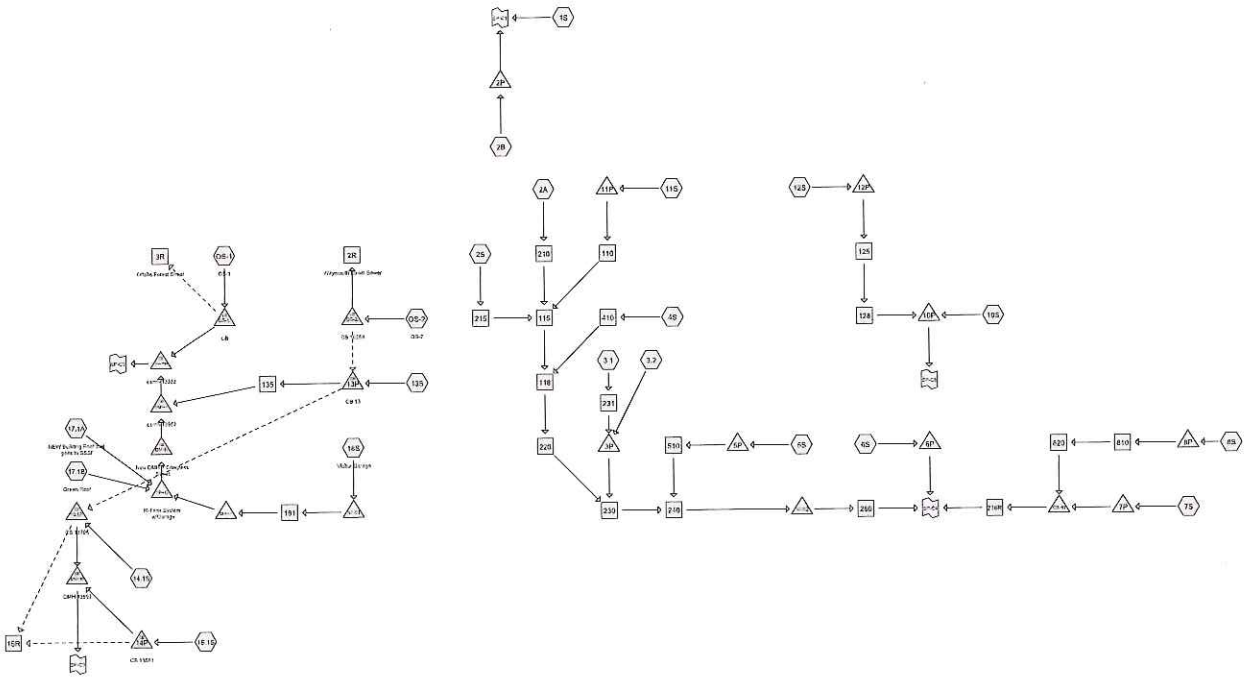
Link SP-C3: Inflow=5.76 cfs 0.345 af
Primary=5.76 cfs 0.345 af

Link SP-C4: Inflow=34.61 cfs 2.702 af
Primary=34.61 cfs 2.702 af

Link SP-C5:

Inflow=4.07 cfs 0.358 af
Primary=4.07 cfs 0.358 af

Total Runoff Area = 15.783 ac Runoff Volume = 5.230 af Average Runoff Depth = 3.98"
26.42% Pervious = 4.170 ac 73.58% Impervious = 11.613 ac



Subcat Reach Pond Link

Routing Diagram for 15466 - Congress CD Post Dev 20180207
Prepared by Sebago Technics, Inc., Printed 9/24/2018
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.026	39	>75% Grass cover, Good, HSG A (1S, 2B, 2S, 3.1, 3.2, 5S, 6S, 8S, 10S, 14.1S, 15.1S)
0.276	86	Green roof (no Walkways) (17.1B)
6.639	98	Paved parking (1S, 2A, 2B, 2S, 3.1, 3.2, 4S, 5S, 6S, 7S, 8S, 10S, 11S, 12S, 13S, 14.1S, 15.1S, 18S)
0.028	98	Paved parking & roofs (17.1A)
3.260	98	Roofs (2S, 5S, 6S, 8S, 10S, 17.1A, 17.1B)
1.998	89	Urban commercial, 85% imp, HSG A (13S, OS-1, OS-2)
0.039	98	Walkways (17.1B)
1.517	43	Woods/grass comb., Fair, HSG A (7S, 8S, 13S)
15.783	**84**	**TOTAL AREA**

Summary for Subcatchment 1S:

Runoff = 0.03 cfs @ 12.16 hrs, Volume= 0.004 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	14,272	98	Paved parking
	5,174	39	>75% Grass cover, Good, HSG A
	19,446	82	Weighted Average
	5,174		26.61% Pervious Area
	14,272		73.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.0500	0.20		**Sheet Flow, SHEET A TO B** Grass: Short n= 0.150 P2= 3.00"
0.2	33	0.0500	3.35		**Shallow Concentrated Flow, SHALLOW B TO C** Grassed Waterway Kv= 15.0 fps
0.3	82	0.0420	4.16		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
0.1	74	0.0500	10.99	8.63	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
2.0					**Direct Entry, DIRECT**
6.0	229	Total			

Summary for Subcatchment 2A:

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.038 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	25,217	98	Paved parking
	25,217		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.60		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
1.3	112	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
3.9					**Direct Entry, DIRECT**
6.0	142	Total			

Summary for Subcatchment 2B:

Runoff = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	10,133	98	Paved parking
	3,735	39	>75% Grass cover, Good, HSG A
	13,868	82	Weighted Average
	3,735		26.93% Pervious Area
	10,133		73.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	30	0.0100	0.79		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.5	123	0.0380	3.96		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
2.0	131	0.0005	1.10	0.86	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
2.9					**Direct Entry, DIRECT**
6.0	284	Total			

Summary for Subcatchment 2S:

Runoff = 0.13 cfs @ 12.10 hrs, Volume= 0.010 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	11,481	98	Paved parking
	2,220	39	>75% Grass cover, Good, HSG A
*	2,456	98	Roofs
	16,157	90	Weighted Average
	2,220		13.74% Pervious Area
	13,937		86.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0180	1.00		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	78	0.0370	3.90		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	136	0.0107	5.08	3.99	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
4.8					**Direct Entry, DIRECT**
6.0	244	Total			

Summary for Subcatchment 3.1:

Runoff = 0.06 cfs @ 12.10 hrs, Volume= 0.005 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	1,661	39	>75% Grass cover, Good, HSG A
*	8,390	98	Paved parking
	10,051	88	Weighted Average
	1,661		16.53% Pervious Area
	8,390		83.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0250	1.14		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.6	220	0.0810	5.78		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
5.0					**Direct Entry, DIRECT**
6.0	250	Total			

Summary for Subcatchment 3.2:

Runoff = 0.00 cfs @ 12.36 hrs, Volume= 0.001 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	2,788	98	Paved parking
	1,301	39	>75% Grass cover, Good, HSG A
	4,089	79	Weighted Average
	1,301		31.82% Pervious Area
	2,788		68.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	66	0.0250	1.34		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
5.2					**Direct Entry, DIRECT**
6.0	66	Total			

Summary for Subcatchment 4S:

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	23,249	98	Paved parking
	23,249		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
1.3	110	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
3.4					**Direct Entry, DIRECT**
6.0	160	Total			

Summary for Subcatchment 5S:

Runoff = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	25,085	98	Paved parking
	26,415	39	>75% Grass cover, Good, HSG A
*	73,528	98	Roofs
	125,028	86	Weighted Average
	26,415		21.13% Pervious Area
	98,613		78.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	35	0.0050	0.62		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
2.2	355	0.0050	2.65	0.93	**Pipe Channel, PIPE B TO C** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.1	35	0.0300	8.51	6.69	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.2	85	0.0160	6.22	4.88	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
2.6					**Direct Entry, DIRECT**
6.0	510	Total			

Summary for Subcatchment 6S:

Runoff = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	2,282	39	>75% Grass cover, Good, HSG A
*	501	98	Paved parking
*	8,302	98	Roofs
	11,085	86	Weighted Average
	2,282		20.59% Pervious Area
	8,803		79.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	30	0.0100	0.79		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	64	0.0100	3.75	1.31	**Pipe Channel, PIPE B TO C (ROOF DRAIN)** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.0	27	0.0740	10.20	3.56	**Pipe Channel, PIPE C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
5.1					**Direct Entry, DIRECT**
6.0	121	Total			

Summary for Subcatchment 7S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	36,084	98	Paved parking
	56,212	43	Woods/grass comb., Fair, HSG A
	92,296	65	Weighted Average
	56,212		60.90% Pervious Area
	36,084		39.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	75	0.0400	1.66		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.5	78	0.0180	2.72		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.7	219	0.0590	4.93		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
0.2	72	0.0970	6.32		**Shallow Concentrated Flow, SHALLOW D TO E** Paved Kv= 20.3 fps
0.2	190	0.1020	15.70	12.33	**Pipe Channel, PIPE E TO F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
3.6					**Direct Entry, DIRECT**
6.0	634	Total			

Summary for Subcatchment 8S:

Runoff = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	16,895	98	Paved parking
	7,542	43	Woods/grass comb., Fair, HSG A
	8,958	39	>75% Grass cover, Good, HSG A
*	12,138	98	Roofs
	45,533	77	Weighted Average
	16,500		36.24% Pervious Area
	29,033		63.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	40	0.0050	0.64		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	93	0.0100	4.91	3.86	**Pipe Channel, PIPE B TO C** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.5	135	0.0100	4.91	3.86	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.4	131	0.0100	4.91	3.86	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
3.8					**Direct Entry, DIRECT**
6.0	399	Total			

Summary for Subcatchment 10S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	25,937	39	>75% Grass cover, Good, HSG A
*	9,276	98	Paved parking
*	2,034	98	Roofs
	37,247	57	Weighted Average
	25,937		69.64% Pervious Area
	11,310		30.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0400	1.38		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.1	37	0.0540	4.72		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	75	0.0200	2.87		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
0.3	113	0.0210	7.12	5.59	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.3	71	0.0050	3.47	2.73	**Pipe Channel, PIPE E TO F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
4.5					**Direct Entry, DIRECT**
6.0	326	Total			

Summary for Subcatchment 11S:

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	11,050	98	Paved parking
	11,050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.60		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.7	60	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
4.5					**Direct Entry, DIRECT**
6.0	90	Total			

Summary for Subcatchment 12S:

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	23,268	98	Paved parking
	23,268		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.60		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.9	80	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	90	0.0100	3.75	1.31	**Pipe Channel, PIPE C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
3.9					**Direct Entry, DIRECT**
6.0	200	Total			

Summary for Subcatchment 13S:

Runoff = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	14,571	98	Paved parking
	2,309	43	Woods/grass comb., Fair, HSG A
	19,134	89	Urban commercial, 85% imp, HSG A
	36,014	90	Weighted Average
	5,179		14.38% Pervious Area
	30,835		85.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		**Sheet Flow, SHEET A TO B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.2	51	0.6400	4.00		**Shallow Concentrated Flow, SHALLOW B TO C** Woodland Kv= 5.0 fps
0.4	105	0.0420	4.16		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
6.2	196	Total			

Summary for Subcatchment 14.1S:

Runoff = 0.21 cfs @ 12.10 hrs, Volume= 0.015 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	19,947	98	Paved parking
	2,530	39	>75% Grass cover, Good, HSG A
	22,477	91	Weighted Average
	2,530		11.26% Pervious Area
	19,947		88.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	30	0.0500	1.51		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
1.4	295	0.0320	3.63		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
4.3					**Direct Entry, DIRECT ENTRY**
6.0	325	Total			

Summary for Subcatchment 15.1S:

Runoff = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	8,038	39	>75% Grass cover, Good, HSG A
*	10,606	98	Paved parking
	18,644	73	Weighted Average
	8,038		43.11% Pervious Area
	10,606		56.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	18	0.2770	0.33		**Sheet Flow, SHEET A TO B** Grass: Short n= 0.150 P2= 3.00"
0.4	170	0.1920	6.57		**Shallow Concentrated Flow, SHALLOW B TO C** Grassed Waterway Kv= 15.0 fps
0.6	195	0.0760	5.60		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
4.1					**Direct Entry, DIRECT**
6.0	383	Total			

Summary for Subcatchment 17.1A: NEW Building Roof that goes to SSSF

Runoff = 0.87 cfs @ 12.09 hrs, Volume= 0.066 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	1,202	98	Paved parking & roofs
*	42,414	98	Roofs
	43,616	98	Weighted Average
	43,616		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 17.1B: Green Roof

Runoff = 0.09 cfs @ 12.10 hrs, Volume= 0.007 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	12,043	86	Green roof (no Walkways)
*	1,692	98	Walkways
*	1,144	98	Roofs
	14,879	88	Weighted Average
	12,043		80.94% Pervious Area
	2,836		19.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	40	0.0100	0.84		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.1	14	0.0100	2.03		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.1	134	0.1600	15.00	5.24	**Pipe Channel, PIPE C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
5.0					**Direct Entry, DIRECT**
6.0	188	Total			

Summary for Subcatchment 18S: Visitor Garage

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.040 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	26,386	98	Paved parking
	26,386		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	40	0.0100	0.84		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	141	0.2000	9.08		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.3	83	0.0110	5.15	4.05	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
4.6					**Direct Entry, DIRECT**
6.0	264	Total			

Summary for Subcatchment OS-1: OS-1

Runoff = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

Area (sf)	CN	Description
17,031	89	Urban commercial, 85% imp, HSG A
2,555		15.00% Pervious Area
14,476		85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	60	0.0400	0.20		**Sheet Flow, Sheet flow A-B** Grass: Short n= 0.150 P2= 3.00"
0.9	180	0.0250	3.21		**Shallow Concentrated Flow, Gutter Flow B-C (Russell Street)** Paved Kv= 20.3 fps
0.7	80	0.0100	2.03		**Shallow Concentrated Flow, Gutter Flow C-D (Hill Street)** Paved Kv= 20.3 fps
1.1	375	0.0800	5.74		**Shallow Concentrated Flow, Gutter Flow D-E (Ellsworth Street** Paved Kv= 20.3 fps
2.2	605	0.0500	4.54		**Shallow Concentrated Flow, Gutter Flow E-F (Congress Street)** Paved Kv= 20.3 fps
10.0	1,300	Total			

Summary for Subcatchment OS-2: OS-2

Runoff = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

Area (sf)	CN	Description
50,885	89	Urban commercial, 85% imp, HSG A
7,633		15.00% Pervious Area
43,252		85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	60	0.0400	0.20		**Sheet Flow, Sheet flow A-B** Grass: Short n= 0.150 P2= 3.00"
0.9	180	0.0250	3.21		**Shallow Concentrated Flow, Gutter Flow B-C (Russell Street)** Paved Kv= 20.3 fps
0.7	80	0.0100	2.03		**Shallow Concentrated Flow, Gutter Flow C-D (Hill Street)** Paved Kv= 20.3 fps
1.1	375	0.0800	5.74		**Shallow Concentrated Flow, Gutter Flow D-E (Ellsworth Street)** Paved Kv= 20.3 fps
2.2	605	0.0500	4.54		**Shallow Concentrated Flow, Gutter Flow E-F (Congress Street** Paved Kv= 20.3 fps
10.0	1,300	Total			

Summary for Reach 2R: Weymouth Street Sewer

Inflow Area = 1.168 ac, 85.00% Impervious, Inflow Depth = 0.28" for 1-Inch event
Inflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af
Outflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Offsite Forest Street

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 15R:

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

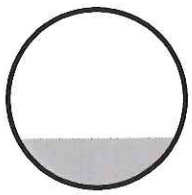
Summary for Reach 110:

Inflow Area = 0.254 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af
Outflow = 0.22 cfs @ 12.10 hrs, Volume= 0.017 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.79 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 0.9 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.31 cfs

8.0" Round Pipe
n= 0.012
Length= 51.0' Slope= 0.0100 '/'
Inlet Invert= 110.51', Outlet Invert= 110.00'



Summary for Reach 115:

Inflow Area = 1.203 ac, 95.77% Impervious, Inflow Depth = 0.65" for 1-Inch event
Inflow = 0.84 cfs @ 12.10 hrs, Volume= 0.065 af
Outflow = 0.83 cfs @ 12.11 hrs, Volume= 0.065 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.52 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.16 fps, Avg. Travel Time= 1.0 min

Peak Storage= 16 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.17 cfs

15.0" Round Pipe
n= 0.012
Length= 67.0' Slope= 0.0078 '/'
Inlet Invert= 110.11', Outlet Invert= 109.59'



Summary for Reach 118:

Inflow Area = 1.737 ac, 97.07% Impervious, Inflow Depth = 0.69" for 1-Inch event
Inflow = 1.29 cfs @ 12.10 hrs, Volume= 0.100 af
Outflow = 1.28 cfs @ 12.11 hrs, Volume= 0.100 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.58 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.18 fps, Avg. Travel Time= 0.7 min

Peak Storage= 18 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 20.98 cfs

18.0" Round Pipe
n= 0.012
Length= 90.0' Slope= 0.0340 '/'
Inlet Invert= 109.44', Outlet Invert= 106.38'



Summary for Reach 125:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.46 cfs @ 12.10 hrs, Volume= 0.035 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.10 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 1.0 min

Peak Storage= 9 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.21 cfs

12.0" Round Pipe
n= 0.012
Length= 79.0' Slope= 0.0182 '/'
Inlet Invert= 131.87', Outlet Invert= 130.43'



Summary for Reach 128:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.10 hrs, Volume= 0.035 af
Outflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.54 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 1.4 min

Peak Storage= 13 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.67 cfs

12.0" Round Pipe
n= 0.012
Length= 71.0' Slope= 0.0048 '/'
Inlet Invert= 130.40', Outlet Invert= 130.06'



Summary for Reach 135:

Inflow Area = 0.827 ac, 85.62% Impervious, Inflow Depth = 0.32" for 1-Inch event
Inflow = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af
Outflow = 0.28 cfs @ 12.12 hrs, Volume= 0.022 af, Atten= 3%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.13 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.40 fps, Avg. Travel Time= 1.6 min

Peak Storage= 11 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 3.58 cfs

8.0" Round Pipe
n= 0.012
Length= 225.0' Slope= 0.0747 '/'
Inlet Invert= 62.69', Outlet Invert= 45.89'



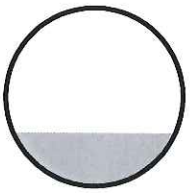
Summary for Reach 181:

Inflow Area = 0.606 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.53 cfs @ 12.09 hrs, Volume= 0.040 af
Outflow = 0.52 cfs @ 12.10 hrs, Volume= 0.040 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.69 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 1.1 min

Peak Storage= 12 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe
n= 0.012
Length= 60.0' Slope= 0.0050 '/'
Inlet Invert= 54.46', Outlet Invert= 54.16'



Summary for Reach 210:

Inflow Area = 0.579 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.50 cfs @ 12.10 hrs, Volume= 0.038 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.34 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 0.8 min

Peak Storage= 8 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.46 cfs

12.0" Round Pipe
n= 0.012
Length= 66.0' Slope= 0.0200 '/'
Inlet Invert= 122.35', Outlet Invert= 121.03'



Summary for Reach 215:

Inflow Area = 0.371 ac, 86.26% Impervious, Inflow Depth = 0.32" for 1-Inch event
Inflow = 0.13 cfs @ 12.10 hrs, Volume= 0.010 af
Outflow = 0.13 cfs @ 12.11 hrs, Volume= 0.010 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.89 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.74 fps, Avg. Travel Time= 1.2 min

Peak Storage= 4 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.96 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 52.0' Slope= 0.0069 '/'
Inlet Invert= 121.67', Outlet Invert= 121.31'



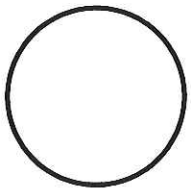
Summary for Reach 216R:

Inflow Area = 3.164 ac, 47.24% Impervious, Inflow Depth = 0.02" for 1-Inch event
Inflow = 0.01 cfs @ 12.52 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.52 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.12 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.27 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 12.52 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 16.96 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 12.0' Slope= 0.2267 '/'
Inlet Invert= 60.11', Outlet Invert= 57.39'



Summary for Reach 220:

Inflow Area = 1.737 ac, 97.07% Impervious, Inflow Depth = 0.69" for 1-Inch event
Inflow = 1.28 cfs @ 12.11 hrs, Volume= 0.100 af
Outflow = 1.23 cfs @ 12.13 hrs, Volume= 0.100 af, Atten= 4%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.93 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.97 fps, Avg. Travel Time= 1.8 min

Peak Storage= 47 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 18.30 cfs

18.0" Round Pipe
n= 0.012
Length= 218.0' Slope= 0.0259 '/'
Inlet Invert= 105.99', Outlet Invert= 100.35'



Summary for Reach 230:

Inflow Area = 2.062 ac, 94.23% Impervious, Inflow Depth = 0.61" for 1-Inch event
Inflow = 1.29 cfs @ 12.12 hrs, Volume= 0.105 af
Outflow = 1.28 cfs @ 12.13 hrs, Volume= 0.105 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.91 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.13 fps, Avg. Travel Time= 0.4 min

Peak Storage= 9 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 49.39 cfs

18.0" Round Pipe
n= 0.012
Length= 87.0' Slope= 0.1884 '/'
Inlet Invert= 100.16', Outlet Invert= 83.77'



Summary for Reach 231:

Inflow Area = 0.231 ac, 83.47% Impervious, Inflow Depth = 0.25" for 1-Inch event
Inflow = 0.06 cfs @ 12.10 hrs, Volume= 0.005 af
Outflow = 0.06 cfs @ 12.10 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 240:

Inflow Area = 4.932 ac, 85.29% Impervious, Inflow Depth = 0.37" for 1-Inch event
Inflow = 1.80 cfs @ 12.12 hrs, Volume= 0.153 af
Outflow = 1.78 cfs @ 12.13 hrs, Volume= 0.153 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.45 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.31 fps, Avg. Travel Time= 0.4 min

Peak Storage= 14 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.69 cfs

18.0" Round Pipe
n= 0.012
Length= 100.0' Slope= 0.1612 '/'
Inlet Invert= 67.96', Outlet Invert= 51.84'



Summary for Reach 260:

Inflow Area = 4.932 ac, 85.29% Impervious, Inflow Depth = 0.37" for 1-Inch event
Inflow = 1.78 cfs @ 12.13 hrs, Volume= 0.153 af
Outflow = 1.77 cfs @ 12.13 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.04 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.79 fps, Avg. Travel Time= 0.3 min

Peak Storage= 11 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 55.59 cfs

24.0" Round Pipe
n= 0.012
Length= 48.0' Slope= 0.0515 '/'
Inlet Invert= 51.84', Outlet Invert= 49.37'



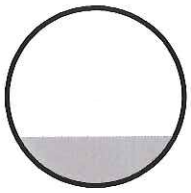
Summary for Reach 410:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.62 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 0.7 min

Peak Storage= 6 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.77 cfs

12.0" Round Pipe
n= 0.012
Length= 35.0' Slope= 0.0051 '/'
Inlet Invert= 110.68', Outlet Invert= 110.50'



Summary for Reach 510:

Inflow Area = 2.870 ac, 78.87% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af
Outflow = 0.52 cfs @ 12.11 hrs, Volume= 0.047 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.95 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.94 fps, Avg. Travel Time= 0.3 min

Peak Storage= 4 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 47.85 cfs

18.0" Round Pipe
n= 0.012
Length= 62.0' Slope= 0.1768 '/'
Inlet Invert= 95.90', Outlet Invert= 84.94'



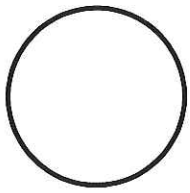
Summary for Reach 810:

Inflow Area = 1.045 ac, 63.76% Impervious, Inflow Depth = 0.05" for 1-Inch event
Inflow = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.47 hrs, Volume= 0.004 af, Atten= 1%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.26 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.35 fps, Avg. Travel Time= 1.5 min

Peak Storage= 1 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 17.81 cfs

12.0" Round Pipe
n= 0.012
Length= 210.0' Slope= 0.2129 '/'
Inlet Invert= 120.21', Outlet Invert= 75.50'



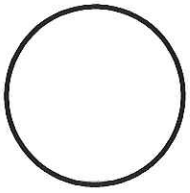
Summary for Reach 820:

Inflow Area = 1.045 ac, 63.76% Impervious, Inflow Depth = 0.05" for 1-Inch event
Inflow = 0.01 cfs @ 12.47 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.50 hrs, Volume= 0.004 af, Atten= 2%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.55 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.82 fps, Avg. Travel Time= 1.5 min

Peak Storage= 1 cf @ 12.48 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 12.32 cfs

12.0" Round Pipe
n= 0.012
Length= 164.0' Slope= 0.1020 '/'
Inlet Invert= 75.58', Outlet Invert= 58.86'



Summary for Pond 1P+G: R-Tank System w/Garage

Inflow Area = 1.949 ac, 85.81% Impervious, Inflow Depth = 0.70" for 1-Inch event
Inflow = 1.48 cfs @ 12.09 hrs, Volume= 0.113 af
Outflow = 0.04 cfs @ 14.20 hrs, Volume= 0.030 af, Atten= 98%, Lag= 126.4 min
Primary = 0.04 cfs @ 14.20 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 50.69' @ 17.15 hrs Surf.Area= 2,963 sf Storage= 3,942 cf

Plug-Flow detention time= 504.5 min calculated for 0.030 af (26% of inflow)
Center-of-Mass det. time= 345.5 min (1,139.4 - 794.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	50.58'	973 cf	**8.50'W x 76.37'L x 5.75'H Field A** 3,732 cf Overall - 1,300 cf Embedded = 2,432 cf x 40.0% Voids
#2A	51.33'	1,300 cf	**Cultec R-902HD** x 20 Inside #1 Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf
#3B	48.37'	3,596 cf	**10.56'W x 179.94'L x 8.96'H Field B** 17,019 cf Overall - 8,029 cf Embedded = 8,989 cf x 40.0% Voids
#4B	48.37'	7,628 cf	**ACF R-Tank HD 5.0** x 375 Inside #3 Inside= 15.7"W x 83.5"H => 8.67 sf x 2.35'L = 20.3 cf Outside= 15.7"W x 83.5"H => 9.13 sf x 2.35'L = 21.4 cf 5 Rows of 75 Chambers
#5C	50.83'	286 cf	**8.50'W x 21.37'L x 5.75'H Field C** 1,044 cf Overall - 329 cf Embedded = 715 cf x 40.0% Voids
#6C	51.58'	329 cf	**Cultec R-902HD** x 5 Inside #5 Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf
#7D	48.37'	675 cf	**10.56'W x 39.19'L x 7.96'H Field D** 3,293 cf Overall - 1,606 cf Embedded = 1,687 cf x 40.0% Voids
#8D	48.37'	1,526 cf	**ACF R-Tank HD 5.0** x 75 Inside #7 Inside= 15.7"W x 83.5"H => 8.67 sf x 2.35'L = 20.3 cf Outside= 15.7"W x 83.5"H => 9.13 sf x 2.35'L = 21.4 cf 5 Rows of 15 Chambers
		16,312 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	45.94'	**12.0" Round Stromdrain** L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 45.94' / 45.76' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	46.04'	**1.5" Vert. Orifice/Grate** C= 0.600
#3	Device 2	48.37'	**2.410 in/hr Filtration over Surface area above 48.37'** Excluded Surface area = 2,314 sf
#4	Device 1	51.20'	**6.0" Vert. Orifice** C= 0.600
#5	Primary	52.20'	**0.4' long x 2.00' rise Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#6	Device 1	53.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.04 cfs @ 14.20 hrs HW=50.58' (Free Discharge)
- **1=Stromdrain** (Passes 0.04 cfs of 7.55 cfs potential flow)
  - **2=Orifice/Grate** (Passes 0.04 cfs of 0.13 cfs potential flow)
    - **3=Filtration** (Exfiltration Controls 0.04 cfs)
  - **4=Orifice** (Controls 0.00 cfs)
  - **6=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **5=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 2P:

Inflow Area = 0.318 ac, 73.07% Impervious, Inflow Depth = 0.11" for 1-Inch event
Inflow = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af
Outflow = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.2 min
Primary = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 107.03' @ 12.16 hrs Surf.Area= 13 sf Storage= 0 cf

Plug-Flow detention time= 0.3 min calculated for 0.003 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (928.3 - 928.0)

Volume	Invert	Avail.Storage	Storage Description
#1	107.00'	169 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
107.00	13	0	0
120.00	13	169	169

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 107.00' / 106.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.16 hrs HW=107.03' (Free Discharge)
- **1=Culvert** (Barrel Controls 0.00 cfs @ 0.81 fps)

Summary for Pond 3P:

Inflow Area = 0.325 ac, 79.05% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.06 cfs @ 12.11 hrs, Volume= 0.005 af
Primary = 0.06 cfs @ 12.11 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 5P:

Inflow Area = 2.870 ac, 78.87% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af
Primary = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 6P:

Inflow Area = 0.254 ac, 79.41% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af
Primary = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 7P:

Inflow Area = 2.119 ac, 39.10% Impervious, Inflow Depth = 0.00" for 1-Inch event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 8P:

Inflow Area = 1.045 ac, 63.76% Impervious, Inflow Depth = 0.05" for 1-Inch event
Inflow = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af
Primary = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 10P:

Inflow Area = 1.389 ac, 57.14% Impervious, Inflow Depth = 0.30" for 1-Inch event
Inflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af
Primary = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 11P:

Inflow Area = 0.254 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af
Primary = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 12P:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Primary = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 13.5P: CB 13796

Inflow Area = 0.516 ac, 88.74% Impervious, Inflow Depth = 0.36" for 1-Inch event
Inflow = 0.21 cfs @ 12.10 hrs, Volume= 0.015 af
Outflow = 0.21 cfs @ 12.10 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.10 hrs, Volume= 0.015 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 42.60' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	38.86'	**10.0" Round 12" SD** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 38.86' / 37.64' S= 0.0813 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	42.50'	**2.0' long Curb Inlet** 2 End Contraction(s)
#3	Secondary	43.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.20 cfs @ 12.10 hrs HW=42.60' (Free Discharge)
↑—**1=12" SD** (Passes 0.20 cfs of 4.79 cfs potential flow)
↑—**2=Curb Inlet** (Weir Controls 0.20 cfs @ 1.03 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=38.86' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 13P: CB 13

Inflow Area = 0.827 ac, 85.62% Impervious, Inflow Depth = 0.32" for 1-Inch event
Inflow = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af
Outflow = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min
Primary = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 66.03' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	66.00'	**1.0" x 3.0" Horiz. Grate X 24.00** C= 0.600 Limited to weir flow at low heads

#2	Secondary	66.20'	**5.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.28 cfs @ 12.10 hrs HW=66.03' (Free Discharge)
↑—**1=Grate** (Weir Controls 0.28 cfs @ 0.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 14P: CB 13581

Inflow Area =	0.428 ac, 56.89% Impervious, Inflow Depth =	0.02"	for 1-Inch event	
Inflow =	0.00 cfs @	15.12 hrs, Volume=	0.001 af	
Outflow =	0.00 cfs @	15.12 hrs, Volume=	0.001 af, Atten= 0%, Lag= 0.0 min	
Primary =	0.00 cfs @	15.12 hrs, Volume=	0.001 af	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 42.50' @ 15.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	40.62'	**8.0" Round 12" SD** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 40.62' / 39.00' S= 0.1080 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Device 1	42.50'	**2.0' long Curb Inlet** 2 End Contraction(s)
#3	Secondary	43.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 15.12 hrs HW=42.50' (Free Discharge)
↑—**1=12" SD** (Passes 0.00 cfs of 2.09 cfs potential flow)
↑—**2=Curb Inlet** (Weir Controls 0.00 cfs @ 0.11 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=40.62' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond CB-63:

Inflow Area =	3.164 ac, 47.24% Impervious, Inflow Depth =	0.02"	for 1-Inch event	
Inflow =	0.01 cfs @	12.50 hrs, Volume=	0.004 af	
Outflow =	0.01 cfs @	12.52 hrs, Volume=	0.004 af, Atten= 0%, Lag= 0.8 min	
Primary =	0.01 cfs @	12.52 hrs, Volume=	0.004 af	

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 59.84' @ 12.52 hrs Surf.Area= 13 sf Storage= 1 cf

Plug-Flow detention time= 0.8 min calculated for 0.004 af (100% of inflow)

Center-of-Mass det. time= 0.8 min (1,000.9 - 1,000.1)

Volume	Invert	Avail.Storage	Storage Description
#1	59.80'	81 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.80	13	0	0
66.00	13	81	81

Device	Routing	Invert	Outlet Devices
#1	Primary	59.80'	**12.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 59.80' / 58.46' S= 0.1340 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.01 cfs @ 12.52 hrs HW=59.84' (Free Discharge)
1=Culvert (Inlet Controls 0.01 cfs @ 0.71 fps)

Summary for Pond DMH 20: DMH 13592

Inflow Area = 0.944 ac, 74.30% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af
Outflow = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 37.81' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.59'	**12.0" Round 12" SD** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.59' / 35.00' S= 0.1295 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.10 hrs HW=37.81' (Free Discharge)
1=12" SD (Inlet Controls 0.21 cfs @ 1.60 fps)

Summary for Pond DMH-7:

Inflow Area = 0.606 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.52 cfs @ 12.10 hrs, Volume= 0.040 af
Primary = 0.52 cfs @ 12.10 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond DMH1: New DMH-1 Congress Street

Inflow Area = 1.949 ac, 85.81% Impervious, Inflow Depth = 0.18" for 1-Inch event
Inflow = 0.04 cfs @ 14.20 hrs, Volume= 0.030 af
Outflow = 0.04 cfs @ 14.20 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.0 min
Primary = 0.04 cfs @ 14.20 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 45.77' @ 14.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	45.66'	**15.0" Round Stormdrain** L= 4.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 45.66' / 45.64' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.04 cfs @ 14.20 hrs HW=45.77' (Free Discharge)
↑—**1=Stormdrain** (Barrel Controls 0.04 cfs @ 1.09 fps)

Summary for Pond hil-01:

Inflow Area = 0.606 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.53 cfs @ 12.09 hrs, Volume= 0.040 af
Primary = 0.53 cfs @ 12.09 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond hil-02:

Inflow Area = 4.932 ac, 85.29% Impervious, Inflow Depth = 0.37" for 1-Inch event
Inflow = 1.78 cfs @ 12.13 hrs, Volume= 0.153 af
Primary = 1.78 cfs @ 12.13 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond OS-1.: CB

Inflow Area = 0.391 ac, 85.00% Impervious, Inflow Depth = 0.28" for 1-Inch event
Inflow = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af
Outflow = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 55.05' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	45.00'	**8.0" Round Stormdrain** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.44' S= 0.0373 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

#2	Device 1	55.00'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Secondary	55.20'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.07 cfs @ 12.16 hrs HW=55.05' (Free Discharge)
↑—**1=Stormdrain** (Passes 0.07 cfs of 5.24 cfs potential flow)
↑—**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.07 cfs @ 0.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=45.00' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond OS-2.: CB 16258

Inflow Area =	1.168 ac, 85.00% Impervious, Inflow Depth =	0.28"	for 1-Inch event	
Inflow =	0.31 cfs @	12.16 hrs, Volume=	0.028 af	
Outflow =	0.31 cfs @	12.16 hrs, Volume=	0.028 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.31 cfs @	12.16 hrs, Volume=	0.028 af	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 83.13' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	79.02'	**8.0" Round Stormdrain**
			L= 35.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 79.02' / 78.25' S= 0.0220 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	83.00'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Secondary	83.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.30 cfs @ 12.16 hrs HW=83.13' (Free Discharge)
↑—**1=Stormdrain** (Passes 0.30 cfs of 3.12 cfs potential flow)
↑—**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.30 cfs @ 1.18 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=79.02' (Free Discharge)
↑—**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond SMH-1: esmh-13952

Inflow Area =	2.775 ac, 85.75% Impervious, Inflow Depth =	0.22"	for 1-Inch event	
Inflow =	0.28 cfs @	12.12 hrs, Volume=	0.052 af	
Outflow =	0.28 cfs @	12.12 hrs, Volume=	0.052 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.28 cfs @	12.12 hrs, Volume=	0.052 af	

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 44.84' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	44.61'	**18.0" Round Culvert** L= 41.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.61' / 41.64' S= 0.0724 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.27 cfs @ 12.12 hrs HW=44.84' (Free Discharge)
↑**1=Culvert** (Inlet Controls 0.27 cfs @ 1.62 fps)

Summary for Pond SMH-13932: esmh-13932

Inflow Area = 3.166 ac, 85.66% Impervious, Inflow Depth = 0.23" for 1-Inch event
Inflow = 0.37 cfs @ 12.13 hrs, Volume= 0.061 af
Outflow = 0.37 cfs @ 12.13 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.13 hrs, Volume= 0.061 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 40.90' @ 12.13 hrs
Flood Elev= 52.64'

Device	Routing	Invert	Outlet Devices
#1	Primary	40.64'	**18.0" Round Sewer** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 40.64' / 38.00' S= 0.0587 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=0.36 cfs @ 12.13 hrs HW=40.90' (Free Discharge)
↑**1=Sewer** (Inlet Controls 0.36 cfs @ 1.74 fps)

Summary for Link SP-C1:

Inflow Area = 0.765 ac, 73.26% Impervious, Inflow Depth = 0.11" for 1-Inch event
Inflow = 0.05 cfs @ 12.16 hrs, Volume= 0.007 af
Primary = 0.05 cfs @ 12.16 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C2:

Inflow Area = 3.166 ac, 85.66% Impervious, Inflow Depth = 0.23" for 1-Inch event
Inflow = 0.37 cfs @ 12.13 hrs, Volume= 0.061 af
Primary = 0.37 cfs @ 12.13 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C3:

Inflow Area = 0.944 ac, 74.30% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af
Primary = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C4:

Inflow Area = 8.351 ac, 70.70% Impervious, Inflow Depth = 0.23" for 1-Inch event
Inflow = 1.82 cfs @ 12.13 hrs, Volume= 0.161 af
Primary = 1.82 cfs @ 12.13 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C5:

Inflow Area = 1.389 ac, 57.14% Impervious, Inflow Depth = 0.30" for 1-Inch event
Inflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af
Primary = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=1.46"
Flow Length=229' Tc=6.0 min CN=82 Runoff=0.75 cfs 0.054 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.70 cfs 0.138 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=1.46"
Flow Length=284' Tc=6.0 min CN=82 Runoff=0.53 cfs 0.039 af

Subcatchment2S: Runoff Area=16,157 sf 86.26% Impervious Runoff Depth=2.08"
Flow Length=244' Tc=6.0 min CN=90 Runoff=0.88 cfs 0.064 af

Subcatchment3.1: Runoff Area=10,051 sf 83.47% Impervious Runoff Depth=1.91"
Flow Length=250' Tc=6.0 min CN=88 Runoff=0.50 cfs 0.037 af

Subcatchment3.2: Runoff Area=4,089 sf 68.18% Impervious Runoff Depth=1.26"
Flow Length=66' Slope=0.0250 '/' Tc=6.0 min CN=79 Runoff=0.13 cfs 0.010 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.57 cfs 0.128 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=1.75"
Flow Length=510' Tc=6.0 min CN=86 Runoff=5.77 cfs 0.418 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=1.75"
Flow Length=121' Tc=6.0 min CN=86 Runoff=0.51 cfs 0.037 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=0.55"
Flow Length=634' Tc=6.0 min CN=65 Runoff=1.03 cfs 0.098 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=1.14"
Flow Length=399' Tc=6.0 min CN=77 Runoff=1.33 cfs 0.099 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=0.28"
Flow Length=326' Tc=6.0 min CN=57 Runoff=0.11 cfs 0.020 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=0.74 cfs 0.061 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=200' Tc=6.0 min CN=98 Runoff=1.57 cfs 0.128 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=2.08"
Flow Length=196' Tc=6.2 min CN=90 Runoff=1.94 cfs 0.143 af

Subcatchment14.1S: Runoff Area=22,477 sf 88.74% Impervious Runoff Depth=2.16"
Flow Length=325' Tc=6.0 min CN=91 Runoff=1.26 cfs 0.093 af

Subcatchment 15.1S: Runoff Area=18,644 sf 56.89% Impervious Runoff Depth=0.92"
Flow Length=383' Tc=6.0 min CN=73 Runoff=0.42 cfs 0.033 af

Subcatchment 17.1A: NEW Building Roof Runoff Area=43,616 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=2.94 cfs 0.239 af

Subcatchment 17.1B: Green Roof Runoff Area=14,879 sf 19.06% Impervious Runoff Depth=1.91"
Flow Length=188' Tc=6.0 min CN=88 Runoff=0.75 cfs 0.054 af

Subcatchment 18S: Visitor Garage Runoff Area=26,386 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=264' Tc=6.0 min CN=98 Runoff=1.78 cfs 0.145 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=1.99"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=0.78 cfs 0.065 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=1.99"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=2.34 cfs 0.194 af

Reach 2R: Weymouth Street Sewer Inflow=2.28 cfs 0.194 af
Outflow=2.28 cfs 0.194 af

Reach 3R: Offsite Forest Street Inflow=0.13 cfs 0.001 af
Outflow=0.13 cfs 0.001 af

Reach 15R: Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach 110: Avg. Flow Depth=0.36' Max Vel=3.87 fps Inflow=0.74 cfs 0.061 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=0.74 cfs 0.061 af

Reach 115: Avg. Flow Depth=0.65' Max Vel=5.11 fps Inflow=3.30 cfs 0.263 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=3.27 cfs 0.263 af

Reach 118: Avg. Flow Depth=0.49' Max Vel=9.65 fps Inflow=4.83 cfs 0.391 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=4.80 cfs 0.391 af

Reach 125: Avg. Flow Depth=0.38' Max Vel=5.80 fps Inflow=1.57 cfs 0.128 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=1.56 cfs 0.128 af

Reach 128: Avg. Flow Depth=0.55' Max Vel=3.53 fps Inflow=1.56 cfs 0.128 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=1.54 cfs 0.128 af

Reach 135: Avg. Flow Depth=0.29' Max Vel=9.56 fps Inflow=1.37 cfs 0.137 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=1.36 cfs 0.137 af

Reach 181: Avg. Flow Depth=0.59' Max Vel=3.70 fps Inflow=1.78 cfs 0.145 af
12.0" Round Pipe n=0.012 L=60.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=1.76 cfs 0.145 af

Reach 210: Avg. Flow Depth=0.38' Max Vel=6.13 fps Inflow=1.70 cfs 0.138 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=1.69 cfs 0.138 af

Reach 215: Avg. Flow Depth=0.37' Max Vel=3.29 fps Inflow=0.88 cfs 0.064 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=0.87 cfs 0.064 af

Reach 216R: Avg. Flow Depth=0.25' Max Vel=15.09 fps Inflow=2.33 cfs 0.197 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=2.33 cfs 0.197 af

Reach 220: Avg. Flow Depth=0.52' Max Vel=8.72 fps Inflow=4.80 cfs 0.391 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=4.70 cfs 0.391 af

Reach 230: Avg. Flow Depth=0.33' Max Vel=18.24 fps Inflow=5.32 cfs 0.437 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=5.30 cfs 0.437 af

Reach 231: Inflow=0.50 cfs 0.037 af
Outflow=0.50 cfs 0.037 af

Reach 240: Avg. Flow Depth=0.50' Max Vel=21.28 fps Inflow=11.02 cfs 0.855 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=10.98 cfs 0.855 af

Reach 260: Avg. Flow Depth=0.60' Max Vel=13.77 fps Inflow=10.98 cfs 0.855 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=10.95 cfs 0.855 af

Reach 410: Avg. Flow Depth=0.54' Max Vel=3.63 fps Inflow=1.57 cfs 0.128 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=1.56 cfs 0.128 af

Reach 510: Avg. Flow Depth=0.35' Max Vel=18.27 fps Inflow=5.77 cfs 0.418 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=5.76 cfs 0.418 af

Reach 810: Avg. Flow Depth=0.19' Max Vel=13.33 fps Inflow=1.33 cfs 0.099 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=1.32 cfs 0.099 af

Reach 820: Avg. Flow Depth=0.22' Max Vel=10.22 fps Inflow=1.32 cfs 0.099 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=1.30 cfs 0.099 af

Pond 1P+G: R-Tank System w/Garage Peak Elev=53.01' Storage=9,113 cf Inflow=5.45 cfs 0.438 af
Outflow=2.18 cfs 0.355 af

Pond 2P: Peak Elev=107.31' Storage=4 cf Inflow=0.53 cfs 0.039 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=0.53 cfs 0.039 af

Pond 3P: Inflow=0.64 cfs 0.047 af
Primary=0.64 cfs 0.047 af

Pond 5P: Inflow=5.77 cfs 0.418 af
Primary=5.77 cfs 0.418 af

Pond 6P: Inflow=0.51 cfs 0.037 af
Primary=0.51 cfs 0.037 af

Pond 7P: Inflow=1.03 cfs 0.098 af
Primary=1.03 cfs 0.098 af

Pond 8P: Inflow=1.33 cfs 0.099 af
Primary=1.33 cfs 0.099 af

Pond 10P: Inflow=1.60 cfs 0.147 af
Primary=1.60 cfs 0.147 af

Pond 11P: Inflow=0.74 cfs 0.061 af
Primary=0.74 cfs 0.061 af

Pond 12P: Inflow=1.57 cfs 0.128 af
Primary=1.57 cfs 0.128 af

Pond 13.5P: CB 13796 Peak Elev=42.94' Inflow=1.83 cfs 0.099 af
Primary=1.83 cfs 0.099 af Secondary=0.00 cfs 0.000 af Outflow=1.83 cfs 0.099 af

Pond 13P: CB 13 Peak Elev=66.33' Inflow=1.94 cfs 0.143 af
Primary=1.37 cfs 0.137 af Secondary=0.56 cfs 0.006 af Outflow=1.94 cfs 0.143 af

Pond 14P: CB 13581 Peak Elev=42.66' Inflow=0.42 cfs 0.033 af
Primary=0.42 cfs 0.033 af Secondary=0.00 cfs 0.000 af Outflow=0.42 cfs 0.033 af

Pond CB-63: Peak Elev=60.68' Storage=11 cf Inflow=2.33 cfs 0.197 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=2.33 cfs 0.197 af

Pond DMH 20: DMH 13592 Peak Elev=38.44' Inflow=2.25 cfs 0.132 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=2.25 cfs 0.132 af

Pond DMH-7: Inflow=1.76 cfs 0.145 af
Primary=1.76 cfs 0.145 af

Pond DMH1: New DMH-1 Congress Street Peak Elev=46.57' Inflow=2.18 cfs 0.355 af
15.0" Round Culvert n=0.013 L=4.0' S=0.0050 '/' Outflow=2.18 cfs 0.355 af

Pond hil-01: Inflow=1.78 cfs 0.145 af
Primary=1.78 cfs 0.145 af

Pond hil-02: Inflow=10.98 cfs 0.855 af
Primary=10.98 cfs 0.855 af

Pond OS-1.: CB Peak Elev=55.22' Inflow=0.78 cfs 0.065 af
Primary=0.65 cfs 0.064 af Secondary=0.13 cfs 0.001 af Outflow=0.78 cfs 0.065 af

Pond OS-2.: CB 16258 Peak Elev=83.51' Inflow=2.34 cfs 0.194 af
Primary=2.28 cfs 0.194 af Secondary=0.06 cfs 0.000 af Outflow=2.34 cfs 0.194 af

Pond SMH-1: esmh-13952 Peak Elev=45.45' Inflow=3.17 cfs 0.493 af
18.0" Round Culvert n=0.012 L=41.0' S=0.0724 '/' Outflow=3.17 cfs 0.493 af

Pond SMH-13932: esmh-13932 Peak Elev=41.57' Inflow=3.78 cfs 0.556 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=3.78 cfs 0.556 af

Link SP-C1: Inflow=1.28 cfs 0.093 af
Primary=1.28 cfs 0.093 af

Link SP-C2: Inflow=3.78 cfs 0.556 af
Primary=3.78 cfs 0.556 af

Link SP-C3: Inflow=2.25 cfs 0.132 af
Primary=2.25 cfs 0.132 af

Link SP-C4: Inflow=13.78 cfs 1.089 af
Primary=13.78 cfs 1.089 af

Link SP-C5: Inflow=1.60 cfs 0.147 af
Primary=1.60 cfs 0.147 af

Total Runoff Area = 15.783 ac Runoff Volume = 2.296 af Average Runoff Depth = 1.75"
26.10% Pervious = 4.119 ac 73.90% Impervious = 11.664 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=2.72"
Flow Length=229' Tc=6.0 min CN=82 Runoff=1.40 cfs 0.101 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=2.54 cfs 0.211 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=2.72"
Flow Length=284' Tc=6.0 min CN=82 Runoff=1.00 cfs 0.072 af

Subcatchment2S: Runoff Area=16,157 sf 86.26% Impervious Runoff Depth=3.49"
Flow Length=244' Tc=6.0 min CN=90 Runoff=1.44 cfs 0.108 af

Subcatchment3.1: Runoff Area=10,051 sf 83.47% Impervious Runoff Depth=3.29"
Flow Length=250' Tc=6.0 min CN=88 Runoff=0.85 cfs 0.063 af

Subcatchment3.2: Runoff Area=4,089 sf 68.18% Impervious Runoff Depth=2.46"
Flow Length=66' Slope=0.0250 '/' Tc=6.0 min CN=79 Runoff=0.27 cfs 0.019 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=2.34 cfs 0.194 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=3.10"
Flow Length=510' Tc=6.0 min CN=86 Runoff=10.09 cfs 0.740 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=3.10"
Flow Length=121' Tc=6.0 min CN=86 Runoff=0.89 cfs 0.066 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=1.39"
Flow Length=634' Tc=6.0 min CN=65 Runoff=3.18 cfs 0.246 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=2.29"
Flow Length=399' Tc=6.0 min CN=77 Runoff=2.75 cfs 0.200 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=0.90"
Flow Length=326' Tc=6.0 min CN=57 Runoff=0.71 cfs 0.064 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.11 cfs 0.092 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=200' Tc=6.0 min CN=98 Runoff=2.34 cfs 0.194 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=3.49"
Flow Length=196' Tc=6.2 min CN=90 Runoff=3.19 cfs 0.241 af

Subcatchment14.1S: Runoff Area=22,477 sf 88.74% Impervious Runoff Depth=3.59"
Flow Length=325' Tc=6.0 min CN=91 Runoff=2.05 cfs 0.155 af

Subcatchment 15.1S: Runoff Area=18,644 sf 56.89% Impervious Runoff Depth=1.97"
Flow Length=383' Tc=6.0 min CN=73 Runoff=0.96 cfs 0.070 af

Subcatchment 17.1A: NEW Building Roof Runoff Area=43,616 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=4.40 cfs 0.364 af

Subcatchment 17.1B: Green Roof Runoff Area=14,879 sf 19.06% Impervious Runoff Depth=3.29"
Flow Length=188' Tc=6.0 min CN=88 Runoff=1.26 cfs 0.094 af

Subcatchment 18S: Visitor Garage Runoff Area=26,386 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=264' Tc=6.0 min CN=98 Runoff=2.66 cfs 0.220 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=3.39"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=1.31 cfs 0.110 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=3.39"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=3.92 cfs 0.330 af

Reach 2R: Weymouth Street Sewer Inflow=2.95 cfs 0.318 af
Outflow=2.95 cfs 0.318 af

Reach 3R: Offsite Forest Street Inflow=0.46 cfs 0.008 af
Outflow=0.46 cfs 0.008 af

Reach 15R: Inflow=1.22 cfs 0.011 af
Outflow=1.22 cfs 0.011 af

Reach 110: Avg. Flow Depth=0.47' Max Vel=4.21 fps Inflow=1.11 cfs 0.092 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=1.11 cfs 0.092 af

Reach 115: Avg. Flow Depth=0.86' Max Vel=5.61 fps Inflow=5.06 cfs 0.411 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=5.03 cfs 0.411 af

Reach 118: Avg. Flow Depth=0.61' Max Vel=10.83 fps Inflow=7.35 cfs 0.605 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=7.31 cfs 0.605 af

Reach 125: Avg. Flow Depth=0.47' Max Vel=6.45 fps Inflow=2.34 cfs 0.194 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=2.33 cfs 0.194 af

Reach 128: Avg. Flow Depth=0.72' Max Vel=3.83 fps Inflow=2.33 cfs 0.194 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=2.30 cfs 0.194 af

Reach 135: Avg. Flow Depth=0.33' Max Vel=10.15 fps Inflow=1.73 cfs 0.219 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=1.72 cfs 0.219 af

Reach 181: Avg. Flow Depth=0.80' Max Vel=3.96 fps Inflow=2.66 cfs 0.220 af
12.0" Round Pipe n=0.012 L=60.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=2.64 cfs 0.220 af

Reach 210: Avg. Flow Depth=0.48' Max Vel=6.82 fps Inflow=2.54 cfs 0.211 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=2.53 cfs 0.211 af

Reach 215: Avg. Flow Depth=0.49' Max Vel=3.75 fps Inflow=1.44 cfs 0.108 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=1.43 cfs 0.108 af

Reach 216R: Avg. Flow Depth=0.41' Max Vel=19.62 fps Inflow=5.88 cfs 0.446 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=5.87 cfs 0.446 af

Reach 220: Avg. Flow Depth=0.66' Max Vel=9.78 fps Inflow=7.31 cfs 0.605 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=7.19 cfs 0.605 af

Reach 230: Avg. Flow Depth=0.42' Max Vel=20.75 fps Inflow=8.29 cfs 0.687 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=8.26 cfs 0.687 af

Reach 231: Inflow=0.85 cfs 0.063 af
Outflow=0.85 cfs 0.063 af

Reach 240: Avg. Flow Depth=0.66' Max Vel=24.42 fps Inflow=18.27 cfs 1.428 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=18.22 cfs 1.428 af

Reach 260: Avg. Flow Depth=0.79' Max Vel=15.85 fps Inflow=18.22 cfs 1.428 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=18.19 cfs 1.428 af

Reach 410: Avg. Flow Depth=0.71' Max Vel=3.95 fps Inflow=2.34 cfs 0.194 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=2.33 cfs 0.194 af

Reach 510: Avg. Flow Depth=0.47' Max Vel=21.44 fps Inflow=10.09 cfs 0.740 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=10.08 cfs 0.740 af

Reach 810: Avg. Flow Depth=0.27' Max Vel=16.46 fps Inflow=2.75 cfs 0.200 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=2.73 cfs 0.200 af

Reach 820: Avg. Flow Depth=0.32' Max Vel=12.61 fps Inflow=2.73 cfs 0.200 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=2.70 cfs 0.200 af

Pond 1P+G: R-Tank System w/Garage Peak Elev=53.95' Storage=11,275 cf Inflow=8.29 cfs 0.678 af
Outflow=4.58 cfs 0.595 af

Pond 2P: Peak Elev=107.44' Storage=6 cf Inflow=1.00 cfs 0.072 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=1.00 cfs 0.072 af

Pond 3P: Inflow=1.12 cfs 0.083 af
Primary=1.12 cfs 0.083 af

Pond 5P: Inflow=10.09 cfs 0.740 af
Primary=10.09 cfs 0.740 af

Pond 6P: Inflow=0.89 cfs 0.066 af
Primary=0.89 cfs 0.066 af

Pond 7P: Inflow=3.18 cfs 0.246 af
Primary=3.18 cfs 0.246 af

Pond 8P: Inflow=2.75 cfs 0.200 af
Primary=2.75 cfs 0.200 af

Pond 10P: Inflow=3.01 cfs 0.258 af
Primary=3.01 cfs 0.258 af

Pond 11P: Inflow=1.11 cfs 0.092 af
Primary=1.11 cfs 0.092 af

Pond 12P: Inflow=2.34 cfs 0.194 af
Primary=2.34 cfs 0.194 af

Pond 13.5P: CB 13796 Peak Elev=43.13' Inflow=4.31 cfs 0.189 af
Primary=3.09 cfs 0.178 af Secondary=1.22 cfs 0.011 af Outflow=4.31 cfs 0.189 af

Pond 13P: CB 13 Peak Elev=66.52' Inflow=4.01 cfs 0.253 af
Primary=1.73 cfs 0.219 af Secondary=2.29 cfs 0.034 af Outflow=4.01 cfs 0.253 af

Pond 14P: CB 13581 Peak Elev=42.78' Inflow=0.96 cfs 0.070 af
Primary=0.96 cfs 0.070 af Secondary=0.00 cfs 0.000 af Outflow=0.96 cfs 0.070 af

Pond CB-63: Peak Elev=62.71' Storage=38 cf Inflow=5.88 cfs 0.446 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=5.88 cfs 0.446 af

Pond DMH 20: DMH 13592 Peak Elev=39.23' Inflow=4.05 cfs 0.249 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=4.05 cfs 0.249 af

Pond DMH-7: Inflow=2.64 cfs 0.220 af
Primary=2.64 cfs 0.220 af

Pond DMH1: New DMH-1 Congress Street Peak Elev=47.13' Inflow=4.58 cfs 0.595 af
15.0" Round Culvert n=0.013 L=4.0' S=0.0050 '/' Outflow=4.58 cfs 0.595 af

Pond hil-01: Inflow=2.66 cfs 0.220 af
Primary=2.66 cfs 0.220 af

Pond hil-02: Inflow=18.22 cfs 1.428 af
Primary=18.22 cfs 1.428 af

Pond OS-1.: CB Peak Elev=55.26' Inflow=1.31 cfs 0.110 af
Primary=0.85 cfs 0.102 af Secondary=0.46 cfs 0.008 af Outflow=1.31 cfs 0.110 af

Pond OS-2.: CB 16258 Peak Elev=83.61' Inflow=3.92 cfs 0.330 af
Primary=2.95 cfs 0.318 af Secondary=0.97 cfs 0.013 af Outflow=3.92 cfs 0.330 af

Pond SMH-1: esmh-13952 Peak Elev=45.88' Inflow=6.09 cfs 0.813 af
18.0" Round Culvert n=0.012 L=41.0' S=0.0724 '/' Outflow=6.09 cfs 0.813 af

Pond SMH-13932: esmh-13932 Peak Elev=42.04' Inflow=6.88 cfs 0.916 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=6.88 cfs 0.916 af

Link SP-C1: Inflow=2.39 cfs 0.174 af
Primary=2.39 cfs 0.174 af

Link SP-C2: Inflow=6.88 cfs 0.916 af
Primary=6.88 cfs 0.916 af

Link SP-C3: Inflow=4.05 cfs 0.249 af
Primary=4.05 cfs 0.249 af

Link SP-C4: Inflow=24.94 cfs 1.939 af
Primary=24.94 cfs 1.939 af

Link SP-C5: Inflow=3.01 cfs 0.258 af
Primary=3.01 cfs 0.258 af

Total Runoff Area = 15.783 ac Runoff Volume = 3.955 af Average Runoff Depth = 3.01"
26.10% Pervious = 4.119 ac 73.90% Impervious = 11.664 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=3.80"
Flow Length=229' Tc=6.0 min CN=82 Runoff=1.93 cfs 0.141 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=3.21 cfs 0.268 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=3.80"
Flow Length=284' Tc=6.0 min CN=82 Runoff=1.38 cfs 0.101 af

Subcatchment2S: Runoff Area=16,157 sf 86.26% Impervious Runoff Depth=4.65"
Flow Length=244' Tc=6.0 min CN=90 Runoff=1.89 cfs 0.144 af

Subcatchment3.1: Runoff Area=10,051 sf 83.47% Impervious Runoff Depth=4.43"
Flow Length=250' Tc=6.0 min CN=88 Runoff=1.14 cfs 0.085 af

Subcatchment3.2: Runoff Area=4,089 sf 68.18% Impervious Runoff Depth=3.50"
Flow Length=66' Slope=0.0250 '/' Tc=6.0 min CN=79 Runoff=0.38 cfs 0.027 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=2.96 cfs 0.247 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=4.22"
Flow Length=510' Tc=6.0 min CN=86 Runoff=13.59 cfs 1.009 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=4.22"
Flow Length=121' Tc=6.0 min CN=86 Runoff=1.20 cfs 0.089 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=2.21"
Flow Length=634' Tc=6.0 min CN=65 Runoff=5.25 cfs 0.390 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=3.31"
Flow Length=399' Tc=6.0 min CN=77 Runoff=3.97 cfs 0.288 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=1.56"
Flow Length=326' Tc=6.0 min CN=57 Runoff=1.39 cfs 0.111 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.41 cfs 0.118 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=200' Tc=6.0 min CN=98 Runoff=2.96 cfs 0.248 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=4.65"
Flow Length=196' Tc=6.2 min CN=90 Runoff=4.19 cfs 0.320 af

Subcatchment14.1S: Runoff Area=22,477 sf 88.74% Impervious Runoff Depth=4.76"
Flow Length=325' Tc=6.0 min CN=91 Runoff=2.67 cfs 0.205 af

Subcatchment 15.1S: Runoff Area=18,644 sf 56.89% Impervious Runoff Depth=2.92"
Flow Length=383' Tc=6.0 min CN=73 Runoff=1.44 cfs 0.104 af

Subcatchment 17.1A: NEW Building Roof Runoff Area=43,616 sf 100.00% Impervious Runoff Depth=5.56"
Tc=6.0 min CN=98 Runoff=5.56 cfs 0.464 af

Subcatchment 17.1B: Green Roof Runoff Area=14,879 sf 19.06% Impervious Runoff Depth=4.43"
Flow Length=188' Tc=6.0 min CN=88 Runoff=1.68 cfs 0.126 af

Subcatchment 18S: Visitor Garage Runoff Area=26,386 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=264' Tc=6.0 min CN=98 Runoff=3.36 cfs 0.281 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=4.54"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=1.73 cfs 0.148 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=4.54"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=5.17 cfs 0.442 af

Reach 2R: Weymouth Street Sewer Inflow=3.31 cfs 0.412 af
Outflow=3.31 cfs 0.412 af

Reach 3R: Offsite Forest Street Inflow=0.73 cfs 0.016 af
Outflow=0.73 cfs 0.016 af

Reach 15R: Inflow=2.76 cfs 0.033 af
Outflow=2.76 cfs 0.033 af

Reach 110: Avg. Flow Depth=0.61' Max Vel=4.27 fps Inflow=1.41 cfs 0.118 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=1.39 cfs 0.118 af

Reach 115: Avg. Flow Depth=1.09' Max Vel=5.70 fps Inflow=6.47 cfs 0.530 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=6.41 cfs 0.530 af

Reach 118: Avg. Flow Depth=0.70' Max Vel=11.53 fps Inflow=9.35 cfs 0.777 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=9.30 cfs 0.777 af

Reach 125: Avg. Flow Depth=0.54' Max Vel=6.84 fps Inflow=2.96 cfs 0.248 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=2.95 cfs 0.248 af

Reach 128: Avg. Flow Depth=1.00' Max Vel=3.87 fps Inflow=2.95 cfs 0.248 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=2.79 cfs 0.248 af

Reach 135: Avg. Flow Depth=0.35' Max Vel=10.44 fps Inflow=1.94 cfs 0.280 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=1.93 cfs 0.280 af

Reach 181: Avg. Flow Depth=1.00' Max Vel=3.94 fps Inflow=3.36 cfs 0.281 af
12.0" Round Pipe n=0.012 L=60.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=2.94 cfs 0.281 af

Reach 210: Avg. Flow Depth=0.55' Max Vel=7.22 fps Inflow=3.21 cfs 0.268 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=3.20 cfs 0.268 af

Reach 215: Avg. Flow Depth=0.58' Max Vel=4.00 fps Inflow=1.89 cfs 0.144 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=1.88 cfs 0.144 af

Reach 216R: Avg. Flow Depth=0.52' Max Vel=22.00 fps Inflow=9.15 cfs 0.678 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=9.15 cfs 0.678 af

Reach 220: Avg. Flow Depth=0.76' Max Vel=10.40 fps Inflow=9.30 cfs 0.777 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=9.15 cfs 0.777 af

Reach 230: Avg. Flow Depth=0.47' Max Vel=22.28 fps Inflow=10.64 cfs 0.890 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=10.61 cfs 0.890 af

Reach 231: Inflow=1.14 cfs 0.085 af
Outflow=1.14 cfs 0.085 af

Reach 240: Avg. Flow Depth=0.77' Max Vel=26.20 fps Inflow=24.09 cfs 1.899 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=24.04 cfs 1.899 af

Reach 260: Avg. Flow Depth=0.92' Max Vel=17.05 fps Inflow=24.04 cfs 1.899 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=23.99 cfs 1.899 af

Reach 410: Avg. Flow Depth=0.90' Max Vel=4.02 fps Inflow=2.96 cfs 0.247 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=2.94 cfs 0.247 af

Reach 510: Avg. Flow Depth=0.55' Max Vel=23.28 fps Inflow=13.59 cfs 1.009 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=13.57 cfs 1.009 af

Reach 810: Avg. Flow Depth=0.32' Max Vel=18.26 fps Inflow=3.97 cfs 0.288 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=3.94 cfs 0.288 af

Reach 820: Avg. Flow Depth=0.39' Max Vel=13.96 fps Inflow=3.94 cfs 0.288 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=3.91 cfs 0.288 af

Pond 1P+G: R-Tank System w/Garage Peak Elev=54.27' Storage=11,982 cf Inflow=9.96 cfs 0.871 af
Outflow=8.32 cfs 0.788 af

Pond 2P: Peak Elev=107.53' Storage=7 cf Inflow=1.38 cfs 0.101 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=1.38 cfs 0.101 af

Pond 3P: Inflow=1.51 cfs 0.113 af
Primary=1.51 cfs 0.113 af

Pond 5P: Inflow=13.59 cfs 1.009 af
Primary=13.59 cfs 1.009 af

Pond 6P: Inflow=1.20 cfs 0.089 af
Primary=1.20 cfs 0.089 af

Pond 7P: Inflow=5.25 cfs 0.390 af
Primary=5.25 cfs 0.390 af

Pond 8P: Inflow=3.97 cfs 0.288 af
Primary=3.97 cfs 0.288 af

Pond 10P: Inflow=4.07 cfs 0.358 af
Primary=4.07 cfs 0.358 af

Pond 11P: Inflow=1.41 cfs 0.118 af
Primary=1.41 cfs 0.118 af

Pond 12P: Inflow=2.96 cfs 0.248 af
Primary=2.96 cfs 0.248 af

Pond 13.5P: CB 13796 Peak Elev=43.23' Inflow=6.54 cfs 0.276 af
Primary=3.78 cfs 0.243 af Secondary=2.76 cfs 0.033 af Outflow=6.54 cfs 0.276 af

Pond 13P: CB 13 Peak Elev=66.65' Inflow=5.84 cfs 0.351 af
Primary=1.94 cfs 0.280 af Secondary=3.91 cfs 0.071 af Outflow=5.84 cfs 0.351 af

Pond 14P: CB 13581 Peak Elev=42.87' Inflow=1.44 cfs 0.104 af
Primary=1.44 cfs 0.104 af Secondary=0.00 cfs 0.000 af Outflow=1.44 cfs 0.104 af

Pond CB-63: Peak Elev=66.15' Storage=81 cf Inflow=9.16 cfs 0.678 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=9.15 cfs 0.678 af

Pond DMH 20: DMH 13592 Peak Elev=39.99' Inflow=5.21 cfs 0.347 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=5.21 cfs 0.347 af

Pond DMH-7: Inflow=2.94 cfs 0.281 af
Primary=2.94 cfs 0.281 af

Pond DMH1: New DMH-1 Congress Street Peak Elev=48.22' Inflow=8.32 cfs 0.788 af
15.0" Round Culvert n=0.013 L=4.0' S=0.0050 '/' Outflow=8.32 cfs 0.788 af

Pond hil-01: Inflow=3.36 cfs 0.281 af
Primary=3.36 cfs 0.281 af

Pond hil-02: Inflow=24.04 cfs 1.899 af
Primary=24.04 cfs 1.899 af

Pond OS-1.: CB Peak Elev=55.29' Inflow=1.73 cfs 0.148 af
Primary=1.00 cfs 0.132 af Secondary=0.73 cfs 0.016 af Outflow=1.73 cfs 0.148 af

Pond OS-2.: CB 16258 Peak Elev=83.68' Inflow=5.17 cfs 0.442 af
Primary=3.31 cfs 0.412 af Secondary=1.86 cfs 0.030 af Outflow=5.17 cfs 0.442 af

Pond SMH-1: esmh-13952 Peak Elev=46.78' Inflow=10.17 cfs 1.067 af
18.0" Round Culvert n=0.012 L=41.0' S=0.0724 '/' Outflow=10.17 cfs 1.067 af

Pond SMH-13932: esmh-13932 Peak Elev=43.10' Inflow=11.15 cfs 1.200 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=11.15 cfs 1.200 af

Link SP-C1:
Inflow=3.31 cfs 0.242 af
Primary=3.31 cfs 0.242 af

Link SP-C2:
Inflow=11.15 cfs 1.200 af
Primary=11.15 cfs 1.200 af

Link SP-C3:
Inflow=5.21 cfs 0.347 af
Primary=5.21 cfs 0.347 af

Link SP-C4:
Inflow=34.33 cfs 2.666 af
Primary=34.33 cfs 2.666 af

Link SP-C5:
Inflow=4.07 cfs 0.358 af
Primary=4.07 cfs 0.358 af

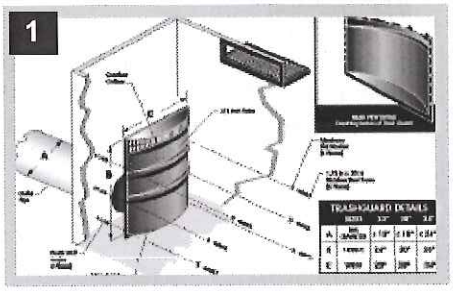
Total Runoff Area = 15.783 ac Runoff Volume = 5.358 af Average Runoff Depth = 4.07"
26.10% Pervious = 4.119 ac 73.90% Impervious = 11.664 ac

R-TANK

R-TANK MAINTENANCE

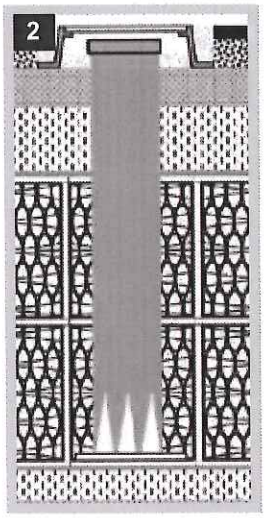
With adequate pre-treatment of stormwater before it enters the ACF R-Tank, heavy sediments, trash, and other debris will not enter the system. Systems like the TrashGuard (see image 1) are simple and inexpensive, but also highly effective. Therefore, most maintenance efforts should be directed at the pre-treatment structures to ensure they are functioning properly.

To monitor the accumulation of fine sediments that may enter the detention/ retention area, ACF R-Tank systems should include maintanance ports.



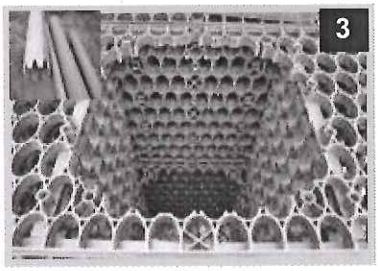
Maintenance

Running from the bottom of the ACF R-Tank up to ground level, Maintenance Ports are made from solid PVC Pipe with notches cut into the bottom. As water is pumped into the port the notches will direct water throughout the bottom of the system to create turbulence, thereby re-suspending accumulated sediments.



After pumping water into the tanks, flushing is completed by vacuuming sediment laden water out of the system either through the outlet structure or through the flush port.

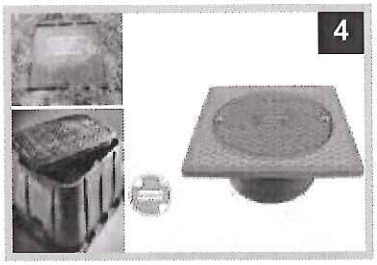
The diameter of the flush port is determined by a number of factors including the rate at which water will be pumped into the system, the number of flush ports incorporated, and the possible requirement of vacuuming through the port. Experience has shown that a 12" port is more than adequate for virtually any required use, with 6" ports more common when vacuuming will be performed at the outlet structure.



Installing the Maintenance System

To install the PCV Pipe, remove the center small plate and cut the top large plate between the remaining interior small plates. Before inserting the port into the Tank, install an anti-scour plate in the bottom of the Tank to prevent disturbance of the base materials.

Maintenance ports should be capped at the surface. In landscaped areas, this may be accomplished with a simple pipe cap or plastic valve box (see image 4 lower inset). In paved areas, metal lids are more appropriate (see image 4).



R-TANK MAINTENANCE

Maintenance Intervals

Maintenance Schedules for the ACF R-Tank System are a function of the contributing area and the type of pre-treatment specified. A standard maintenance schedule may include quarterly inspections through the first year of use, with yearly inspections thereafter. Flushing should be performed if sediment should the lesser of 6" or 15% of the system height.



Availability

All system components, including caps, lids, anti-scour plates, frames and covers are available from ACF. In fact, we've created Maintenance Port Kids (see image 5) that include everything needed except for the pipe itself. Contact your local sales representative or our Sales Office at 800-448-3636 for assistance.

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R TANK

R-TANK OPERATION, INSPECTION & MAINTENANCE

Operation

Your ACF R-Tank System has been designed to function in conjunction with the engineered drainage system on your site, the existing municipal infrastructure, and/or the existing soils and geography of the receiving watershed. Unless your site included certain unique and rare features, the operation of your R-Tank System will be driven by naturally occurring systems and will function autonomously. However, upholding a proper schedule of Inspection & Maintenance is critical to ensuring continued functionality and optimum performance of the system.

Inspection

Both the R-Tank and all stormwater pre-treatment features incorporated into your site must be inspected regularly. Inspection frequency for your system must be determined based on the contributing drainage area, but should never exceed one year between inspections (six months during the first year of operation).

Inspections may be required more frequently for pre-treatment systems. You should refer to the manufacturer requirements for the proper inspection schedule.

With the right equipment your inspection and measurements can be accomplished from the surface without physically entering any confined spaces. If your inspection does require confined space entry, you MUST follow all local/regional requirements as well as OSHA standards.

R-Tank Systems may incorporate Inspection Ports, Maintenance Ports, and/or adjoining manholes. Each of these features are easily accessed by removing the lid at the surface. With the cover removed, a visual inspection can be performed to identify sediment deposits within the structure. Using a flashlight, ALL access points should be examined to complete a thorough inspection.

Inspection Ports

Usually located centrally in the R-Tank System, these perforated columns are designed to give the user a base-line sediment depth across the system floor.

Maintenance Ports

Usually located near the inlet and outlet connections, you'll likely find deeper deposits of heavier sediments when compared to the Inspection Ports.

Manholes

Most systems will include at least two manholes - one at the inlet and another at the outlet. There may be more than one location where stormwater enters the system, which would result in additional manholes to inspect.

Bear in mind that these manholes often include a sump below the invert of the pipe connecting to the R-Tank. These sumps are designed to capture sediment before it reaches the R-Tank, and they should be kept clean to ensure they function properly. However, existence of sediment in the sump does NOT necessarily mean sediment has accumulated in the R-Tank.

After inspecting the bottom of the structure, use a mirror on a pole (or some other device) to check for sediment or debris in the pipe connecting to the R-Tank.

R-TANK OPERATION INSPECTION & MAINTENANCE

If sediment or debris is observed in any of these structures, you should determine the depth of the material. This is typically accomplished with a stadia rod, but you should determine the best way to obtain the measurement.

All observations and measurements should be recorded on an Inspection Log kept on file. We've included a form you can use at the end of this guideline.

Maintenance

The R-Tank System should be back-flushed once sediment accumulation has reached 6" or 15% of the total system height. Use the chart below as a guideline to determine the point at which maintenance is required on your system.

R-Tank Unit	Height	Max Sediment Dept
Mini	9.5"	1.5"
Single	17"	3"
Double	34"	5"
Triple	50"	6"
Quad	67"	6"
Pent	84"	6"

Before any maintenance is performed on your system, be sure to plug the outlet pipe to prevent contamination of the adjacent systems.

To back-flush the R-Tank, water is pumped into the system through the Maintenance Ports as rapidly as possible. Water should be pumped into ALL Maintenance Ports. The turbulent action of the water moving through the R-Tank will suspend sediments which may then be pumped out.

If your system includes an Outlet Structure, this will be the ideal location to pump contaminated water out of the system. However, removal of back-flush water may be accomplished through the Maintenance Ports, as well.

For systems with large footprints that would require extensive volumes of water to properly flush the system, you should consider performing your maintenance within 24 hours of a rain event. Stormwater entering the system will aid in the suspension of sediments and reduce the volume of water required to properly flush the system.

Once removed, sediment-laden water may be captured for disposal or pumped through a Dirtbag™ (if permitted by the locality).

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Step-By-Step Inspection & Maintenance Routine

1) **Inspection**
    a. Inspection Port
        i. Remove Cap
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod
        iv. Record results on Maintenance Log
        v. Replace Cap
    b. Maintenance Port/s
        i. Remove Cap
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod
        iv. Record results on Maintenance Log
        v. Replace Cap
        vi. Repeat for ALL Maintenance Ports
    c. Adjacent Manholes
        i. Remove Cover
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod, accounting for depth of sump (if present)
        iv. Inspect pipes connecting to R-Tank
        v. Record results on Maintenance Log
        vi. Replace Cover
        vii. Repeat for ALL Manholes that connect to the R-Tank

2) **Maintenance**
    a. Plug system outlet to prevent discharge of back-flush water
    b. Determine best location to pump out back-flush water
    c. Remove Cap from Maintenance Port
    d. Pump water as rapidly as possible (without over-topping port) into system until at least 1"
    of water covers system bottom
    e. Replace Cap
    f. Repeat at ALL Maintenance Ports
    g. Pump out back-flush water to complete back-flushing
    h. Vacuum all adjacent structures and any other structures or stormwater pre-treatment systems that require attention
    i. Sediment-laden water may be captured for disposal or pumped through a Dirtbag™.
    j. Replace any remaining Caps or Covers
    k. Record the back-flushing event in your Maintenance Log with any relevant specifics

R-Tank Maintenance Log

Site Name:_____

Location:_____

System Owner:_____

Company Responsible for Maintenance:_____

Contact:_____

Phone Numer:_____

Date	Location	Depth to Bottom	Depth to Sediment	Sediment Depth	Observations/Notes	Initials

Contactor® & Recharger®
Stormwater Chambers



Operation and Maintenance Guidelines
for CULTEC Stormwater Management Systems

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Contact Information:
For general information on our other products and services, please contact our offices within the United States at (800)428-5832, (203)775-4416 ext. 202, or e-mail us at custservice@cultec.com.

For technical support, please call (203)775-4416 ext. 203 or e-mail tech@cultec.com.

Visit www.cultec.com/downloads.html for Product Downloads and CAD details.

Doc ID: CULG008 05-17
May 2017

These instructions are for single-layer traffic applications only. For multi-layer applications, contact CULTEC.
All illustrations and photos shown herein are examples of typical situations. Be sure to follow the engineer's drawings.
Actual designs may vary.

This manual contains guidelines recommended by CULTEC, Inc. and may be used in conjunction with, but not to supersede, local regulations or regulatory authorities. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Introduction

The CULTEC Subsurface Stormwater Management System is a high-density polyethylene (HDPE) chamber system arranged in parallel rows surrounded by washed stone. The CULTEC chambers create arch-shaped voids within the washed stone to provide stormwater detention, retention, infiltration, and reclamation. Filter fabric is placed between the native soil and stone interface to prevent the intrusion of fines into the system. In order to minimize the amount of sediment which may enter the CULTEC system, a sediment collection device (stormwater pretreatment device) is recommended upstream from the CULTEC chamber system. Examples of pretreatment devices include, but are not limited to, an appropriately sized catch basin with sump, pretreatment catchment device, oil grit separator, or baffled distribution box. Manufactured pretreatment devices may also be used in accordance with CULTEC chambers. Installation, operation, and maintenance of these devices shall be in accordance with manufacturer's recommendations. Almost all of the sediment entering the stormwater management system will be collected within the pretreatment device.

Best Management Practices allow for the maintenance of the preliminary collection systems prior to feeding the CULTEC chambers. The pretreatment structures shall be inspected for any debris that will restrict inlet flow rates. Outfall structures, if any, such as outlet control must also be inspected for any obstructions that would restrict outlet flow rates. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Operation and Maintenance Requirements

I. Operation

CULTEC stormwater management systems shall be operated to receive only stormwater run-off in accordance with applicable local regulations. CULTEC subsurface stormwater management chambers operate at peak performance when installed in series with pretreatment. Pretreatment of suspended solids is superior to treatment of solids once they have been introduced into the system. The use of pretreatment is adequate as long as the structure is maintained and the site remains stable with finished impervious surfaces such as parking lots, walkways, and pervious areas are properly maintained. If there is to be an unstable condition, such as improvements to buildings or parking areas, all proper silt control measures shall be implemented according to local regulations.

II. Inspection and Maintenance Options

A. The CULTEC system may be equipped with an inspection port located on the inlet row. The inspection port is a circular cast box placed in a rectangular concrete collar. When the lid is removed, a 6-inch (150 mm) pipe with a screw-in plug will be exposed. Remove the plug. This will provide access to the CULTEC Chamber row below. From the surface, through this access, the sediment may be measured at this location. A stadia rod may be used to measure the depth of sediment if any in this row. If the depth of sediment is in excess of 3 inches (76 mm), then this row should be cleaned with high pressure water through a culvert cleaning nozzle. This would be carried out through an upstream manhole or through the CULTEC StormFilter Unit (or other pre-treatment device). CCTV inspection of this row can be deployed through this access port to deter mine if any sediment has accumulated in the inlet row.

B. If the CULTEC bed is not equipped with an inspection port, then access to the inlet row will be through an upstream manhole or the CULTEC StormFilter.

1. Manhole Access
This inspection should only be carried out by persons trained in confined space entry and sewer inspection services. After the manhole cover has been removed a gas detector must be lowered into the manhole to ensure that there are not high concentrations of toxic gases present. The inspector should be lowered into the manhole with the proper safety equipment as per OSHA requirements. The inspector may be able to observe sediment from this location. If this is not possible, the inspector will need to deploy a CCTV robot to permit viewing of the sediment.

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2. **StormFilter Access**
Remove the manhole cover to allow access to the unit. Typically a 30-inch (750 mm) pipe is used as a riser from the StormFilter to the surface. As in the case with manhole access, this access point requires a technician trained in confined space entry with proper gas detection equipment. This individual must be equipped with the proper safety equipment for entry into the StormFilter. The technician will be lowered onto the StormFilter unit. The hatch on the unit must be removed. Inside the unit are two filters which may be removed according to StormFilter maintenance guidelines. Once these filters are removed the inspector can enter the StormFilter unit to launch the CCTV camera robot.

C. The inlet row of the CULTEC system is placed on a polyethylene liner to prevent scouring of the washed stone beneath this row. This also facilitates the flushing of this row with high pressure water through a culvert cleaning nozzle. The nozzle is deployed through a manhole or the StormFilter and extended to the end of the row. The water is turned on and the inlet row is back-flushed into the manhole or StormFilter. This water is to be removed from the manhole or StormFilter using a vacuum truck.

III. Maintenance Guidelines

The following guidelines shall be adhered to for the operation and maintenance of the CULTEC stormwater management system:

A. The owner shall keep a maintenance log which shall include details of any events which would have an effect on the system's operational capacity.

B. The operation and maintenance procedure shall be reviewed periodically and changed to meet site conditions.

C. Maintenance of the stormwater management system shall be performed by qualified workers and shall follow applicable occupational health and safety requirements.

D. Debris removed from the stormwater management system shall be disposed of in accordance with applicable laws and regulations.

IV. Suggested Maintenance Schedules

A. Minor Maintenance
The following suggested schedule shall be followed for routine maintenance during the regular operation of the stormwater system:

Frequency	Action
Monthly in first year	Check inlets and outlets for clogging and remove any debris, as required.
Spring and Fall	Check inlets and outlets for clogging and remove any debris, as required.
One year after commissioning and every third year following	Check inlets and outlets for clogging and remove any debris, as required.

B. Major Maintenance
The following suggested maintenance schedule shall be followed to maintain the performance of the CULTEC stormwater management chambers. Additional work may be necessary due to insufficient performance and other issues that might be found during the inspection of the stormwater management chambers. (See table on next page)

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	Frequency	Action
Inlets and Outlets	Every 3 years	• Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
	Spring and Fall	• Check inlet and outlets for clogging and remove any debris as required.
CULTEC Stormwater Chambers	2 years after commissioning	• Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. • Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
	9 years after commissioning every 9 years following	• Clean stormwater management chambers and feed connectors of any debris. • Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. • Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
	45 years after commissioning	• Clean stormwater management chambers and feed connectors of any debris. • Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. • Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique. • Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. • Attain the appropriate approvals as required. • Establish a new operation and maintenance schedule.
Surrounding Site	Monthly in 1st year	• Check for depressions in areas over and surrounding the stormwater management system.
	Spring and Fall	• Check for depressions in areas over and surrounding the stormwater management system.
	Yearly	• Confirm that no unauthorized modifications have been performed to the site.

For additional information concerning the maintenance of CULTEC Subsurface Stormwater Management Chambers, please contact CULTEC, Inc. at 1-800-428-5832.

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WQMP
Operation & Maintenance (O&M) Plan

Project Name:_____

Prepared for:

Project Name: _____

Address:_____

City, State Zip:_____

Prepared on:

Date:_____

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This O&M Plan describes the designated responsible party for implementation of this WQMP, including: operation and maintenance of all the structural BMP(s), conducting the training/educational program and duties, and any other necessary activities. The O&M Plan includes detailed inspection and maintenance requirements for all structural BMPs, including copies of any maintenance contract agreements, manufacturer's maintenance requirements, permits, etc.

8.1.1 Project Information

Project name	
Address	
City, State Zip	
Site size	
List of structural BMPs, number of each	
Other notes	

8.1.2 Responsible Party

The responsible party for implementation of this WQMP is:

Name of Person or HOA Property Manager	
Address	
City, State Zip	
Phone number	
24-Hour Emergency Contact number	
Email	

8.1.3 Record Keeping

Parties responsible for the O&M plan shall retain records for at least 5 years.

All training and educational activities and BMP operation and maintenance shall be documented to verify compliance with this O&M Plan. A sample Training Log and Inspection and Maintenance Log are included in this document.

8.1.4 Electronic Data Submittal

This document along with the Site Plan and Attachments shall be provided in PDF format. AutoCAD files and/or GIS coordinates of BMPs shall also be submitted to the City.

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Appendix ____

BMP SITE PLAN

Site plan is preferred on minimum 11" by 17" colored sheets, as long as legible.

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BMP OPERATION & MAINTENANCE LOG

Project Name: _____

Today's Date: _____

Name of Person Performing Activity (Printed): _____

Signature: _____

BMP Name (As Shown in O&M Plan)	Brief Description of Implementation, Maintenance, and Inspection Activity Performed

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Minor Maintenance

Frequency		Action
Monthly in first year		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
□ Month 1	Date:	
□ Month 2	Date:	
□ Month 3	Date:	
□ Month 4	Date	
□ Month 5	Date:	
□ Month 6	Date:	
□ Month 7	Date:	
□ Month 8	Date:	
□ Month 9	Date:	
□ Month 10	Date:	
□ Month 11	Date:	
□ Month 12	Date:	
Spring and Fall		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
One year after commissioning and every third year following		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
□ Year 1	Date:	
□ Year 4	Date:	
□ Year 7	Date:	
□ Year 10	Date:	
□ Year 13	Date:	
□ Year 16	Date:	
□ Year 19	Date:	
□ Year 22	Date:	

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Major Maintenance

	Frequency		Action
Inlets and Outlets	**Every 3 years**		Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
			Notes
	□ Year 1	Date:	
	□ Year 4	Date:	
	□ Year 7	Date:	
	□ Year 10	Date:	
	□ Year 13	Date:	
	□ Year 16	Date:	
	□ Year 19	Date:	
	□ Year 22	Date:	
	Spring and Fall		Check inlet and outlets for clogging and remove any debris, as required.
			Notes
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
CULTEC Stormwater Chambers	**2 years after commissioning**		□ Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. □ Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
			Notes
	□ Year 2	Date:	

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Major Maintenance

	Frequency		Action
CULTEC Stormwater Chambers	**9 years after commissioning every 9 years following**		□ Clean stormwater management chambers and feed connectors of any debris. □ Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. □ Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
			Notes
	□ Year 9	Date:	
	□ Year 18	Date:	
	□ Year 27	Date:	
	□ Year 36	Date:	
	45 years after commissioning		□ Clean stormwater management chambers and feed connectors of any debris. □ Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. □ Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique. □ Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. □ Attain the appropriate approvals as required. □ Establish a new operation and maintenance schedule.
			Notes
	□ Year 45	Date:	

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Major Maintenance

	Frequency		Action
Surrounding Site	**Monthly in 1st year**		□ Check for depressions in areas over and surrounding the stormwater management system.
			Notes
	□ Month 1	Date:	
	□ Month 2	Date:	
	□ Month 3	Date:	
	□ Month 4	Date:	
	□ Month 5	Date:	
	□ Month 6	Date:	
	□ Month 7	Date:	
	□ Month 8	Date:	
	□ Month 9	Date:	
	□ Month 10	Date:	
	□ Month 11	Date:	
	□ Month 12	Date:	
	Spring and Fall		□ Check for depressions in areas over and surrounding the stormwater management system.
			Notes
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	Yearly		□ Confirm that no unauthorized modifications have been performed to the site.
			Notes
	□ Year 1	Date:	
	□ Year 2	Date:	
	□ Year 3	Date:	
	□ Year 4	Date:	
	□ Year 5	Date:	
	□ Year 6	Date:	
	□ Year 7	Date:	

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CULG008 05-17

Section 13

Urban Impaired Stream Submissions

Section 13: Urban Impaired Streams

A project must meet the urban impaired stream standards if located within an urban impaired stream watershed As this project is not tributary to an Urban Impaired Stream as defined by Maine DEP Chapter 502, this project is not subject to the urban impaired stream standard.

Section 14

Basic Standards

Section 14: Basic Standards

A. Narrative

Site specific Erosion and Sedimentation Control (ESC) measures have been designed for the site. All ESC and stabilization measures have been prepared to address the requirements of the basic stabilization standards as defined by Maine DEP Chapter 500, Stormwater Management regulations. Maintenance, inspections and Housekeeping is addressed in the Stormwater Management Plan, Section 12.

B. Implementation schedule

Final stabilization removals are anticipated during late 2022. Reference is made to Section 1 for the construction schedule timing.

C./D./E. ESC Plan, Details and Work Limits

The proposed measures include the drainage and erosion control elements, their locations and the work/disturbance limits, as required.

F. Design Drawings

The design drawings include ESC measures designed in accordance with the *Erosion and Sediment Control Handbook for Construction: Best Management Practices*, latest edition.

G. ESC Calculations for sizing, spacing or stabilizing ESC measures.

Reference is made to Section 12-Stormwater for calculations related to sizing and spacing of ESC measures, as applicable.

Section 15

Groundwater

Section 15: Groundwater

A. Narrative and Report

The proposed property maintenance facility with not draw from, or eject to aquifers. No groundwater degradation is anticipated as a result of the site development.

(1) Location and Maps
The site has been previously reviewed under the provisions of Site Law that included significant sand and gravel aquifers, surficial geology, and bedrock maps. Copies of the maps are not included in this submittal.

(2) Quantity
Not applicable.

(3) Sources

Solid waste:

Construction period solid waste removal will be facilitated by the Construction Manager by contract with a licensed waste facility.

Post construction solid waste will be collected internal to the building and placed in external dumpsters that are emptied on a regular schedule and disposed of off-site as part as part of an existing solid waste removal contract between MMC and Troiano Waste Services.

Hazardous materials will be handled and disposed of by existing MMC protocol. No changes to existing procedures are proposed or anticipated as part of the site redevelopment.

(4) Measures to prevent degradation.
The Construction Manager will carefully monitor construction activity and MMC will be responsible for post-construction monitoring.

B. Groundwater Protection Plan
Not applicable

Section 16

Water Supply

Will Conway

From: Dylan Stuart
Sent: Monday, September 24, 2018 11:22 AM
To: rbartels@pwd.org
Cc: Will Conway; 15466
Subject: Maine Medical Center Ability to Serve Request
Attachments: 15466U2-U-CONGRESS.pdf

Robert,

I am writing to request an ability to serve letter for the Maine Medical Center Expansion project following our meeting from last week. We have updated the locations for the domestic and fire services coming from Gilman and Congress Street. Please see the attached Utility plan as well as the most updated Peak Flow Based on Fixture Count form that was filled out by our MEP engineer.
Please let me know if you have any questions or require any additional information.

Thank you,

Dylan Stuart *Civil Engineer*
Office: 207.200.2100 | Direct: 207.200.2093
75 John Roberts Rd., Suite 4A, South Portland, ME 04106
dstuart@sebagotechnics.com | www.sebagotechnics.com
An Employee-Owned Company

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TECHNICS

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Peak Flow Based on Fixture Count

Customer	Maine Medical Center
Street Address	22 Bramhall Street
City	Portland

Fixture	Fixture Value 60 psi		No. of Fixtures		Fixture Value
Bathtub	8	x	0	=	0
Bedpan Washers	10	x	5	=	50
Bidet	2	x	0	=	0
Dental Unit	2	x	0	=	0
Drinking Fountain - Public	2	x	0	=	0
Kitchen Sink	2.2	x	95	=	209
Lavatory	1.5	x	141	=	211.5
Showerhead (Shower Only)	2.5	x	100	=	250
Service Sink	4	x	10	=	40
Toilet -Flush Valve	35	x	142	=	4970
-Tank Type	4	x	0	=	0
Urinal -Pedestal Flush Valve	35	x	0	=	0
-Wall Flush Valve	16	x	17	=	272
Wash Sink (Each Set of Faucets)	4	x	8	=	32
Dishwasher	2	x	0	=	0
Washing Machine	6	x	0	=	0
Hose (50 ft. Wash Down) -1/2 in.	5	x	0	=	0
-5/8 in.	9	x	0	=	0
-3/4 in.	12	x	0	=	0

Combined Fixture Value Total: 6034.5

Customer Peak Demand From Fig. 4-2 or 4-3	175
Pressure Factor From Table 4-1	1.17

No. of Irrigation Sections (Areas of 100 sq. ft.)	0
Irrigation Factor (1.16-Spray Systems, 0.40-Rotary Systems)	

Hose Bibs for Irrigation:

Size	Fixture Value	No. of Fixtures
1/2"		
5/8"		
3/4"		

Total Fixed Demand (Peak Flow) 204.75 gpm

Table 4-1 Pressure Adjustment Factors

Working Pressure at Meter Discharge (psi)	Pressure Adjustment Factor
35	0.74
40	0.80
50	0.90
60	1.00
70	1.09
80	1.17
90	1.25
100	1.34

Adapted from AWWA Manual M22 table 4-1

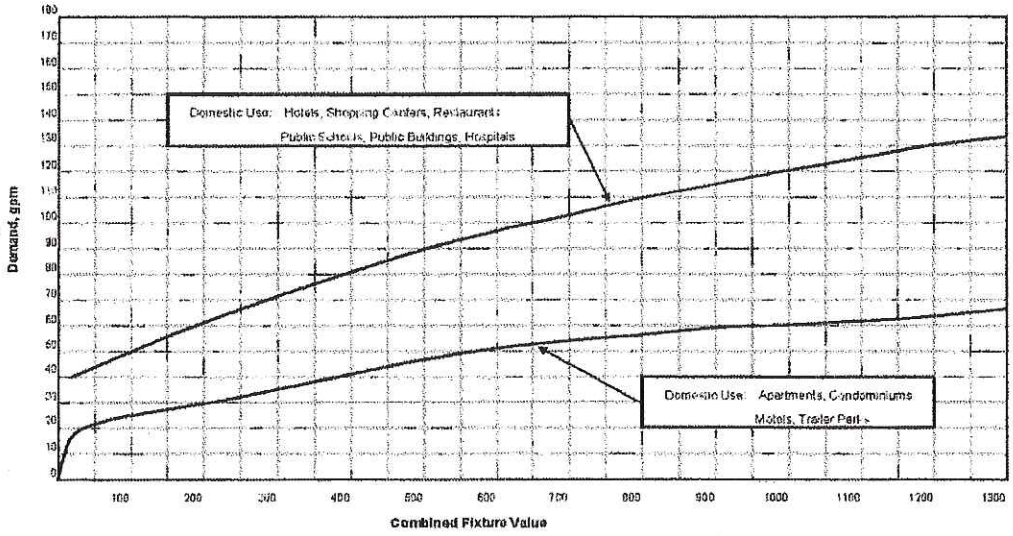


Figure 4-2 Water flow demand per fixture value - low range

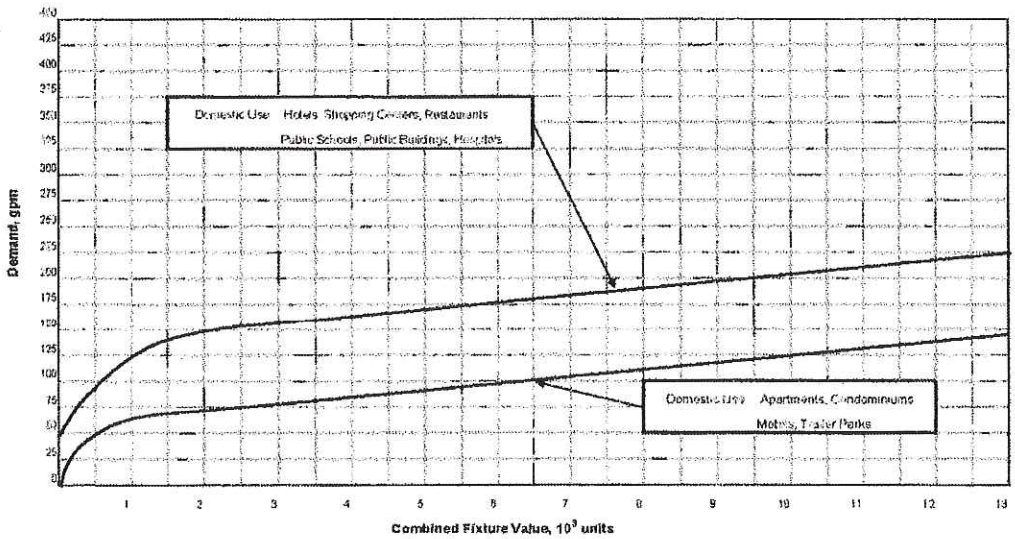


Figure 4-3 Water flow demand per fixture value - High range

Section 17

Wastewater Disposal

Section 17: Wastewater Disposal

A municipal facility with provide sewage disposal. A City of Portland Wastewater Capacity Application will be reviewed by Water Resources as part of the Site Plan Review.

Section 18

Solid Waste

Section 18: Solid Waste

Construction period solid waste removal will be managed by the construction manager. Demolition debris will be recycled to the greatest extent possible and will be disposed of at a licensed facility.

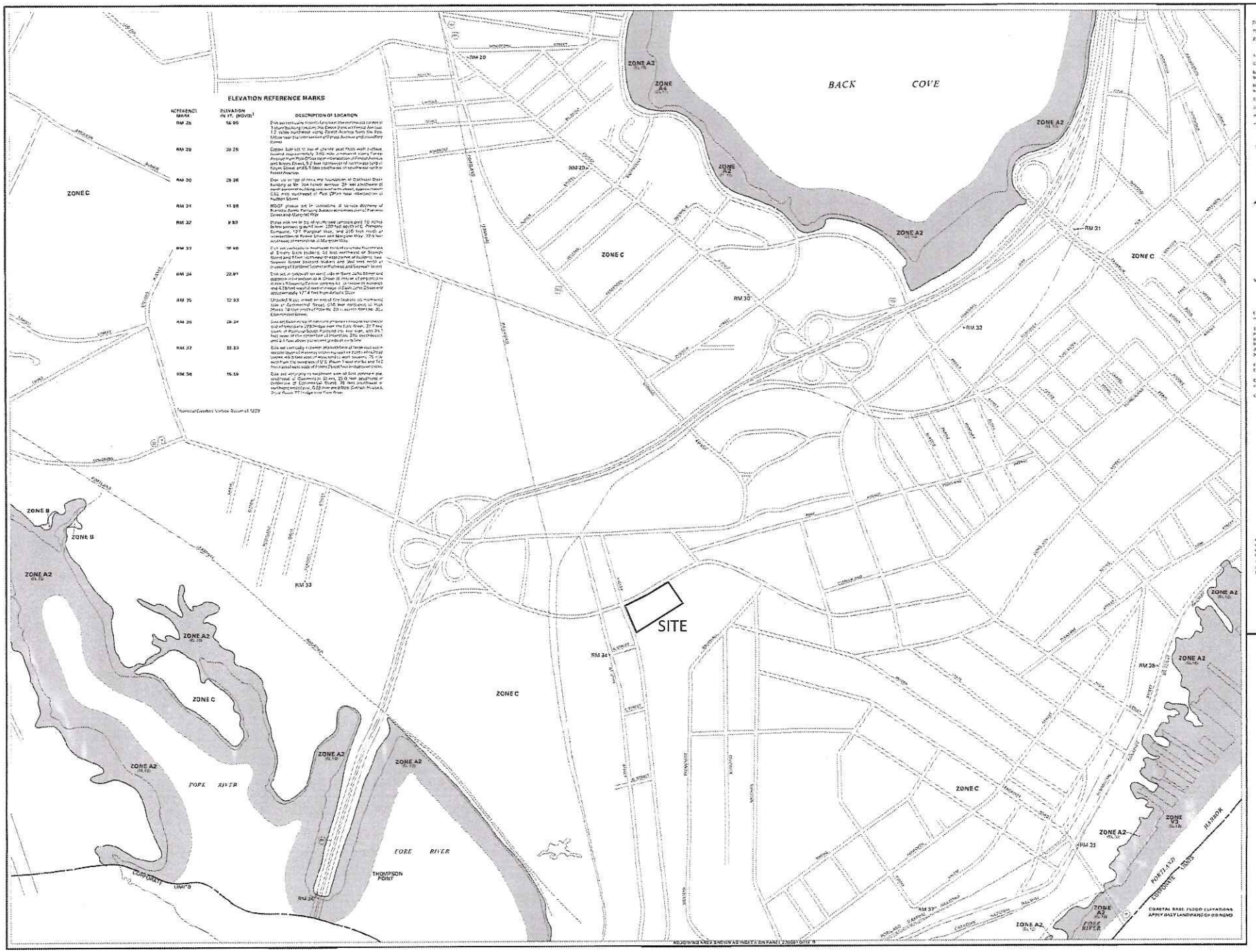
Post construction solid waste will be handled under the provisions of an existing waste disposal contracts in place between Troiano Waste Management and MMC.

Section 19

Flooding

Section 19: Flooding

The project site is not located in a flood plain and will not cause an unreasonable flood hazard to any structure. A copy of the FEMA Flood Insurance Rate Map (FIRM) is enclosed in this section.



ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FT. (NGVD)[1]	DESCRIPTION OF LOCATION
RM 20	16.06	Disk set vertically in north face of the northwest corner of 3-story building (number 79) on Fore Street at Forest Avenue, 1.2 miles northeast along Forest Avenue from the flashing beacon at the intersection of Forest Avenue and Woodfords Corner
RM 29	20.26	Copper bolt set in top of granite post flush with surface, located approximately 3.65 mile northeast along Forest Avenue from Woodfords Corner intersection of Forest Avenue and Nasons Street, 5.2 feet northwest of northwest corner of Nasons Street and 5.1 feet southwest of southwest curb of Forest Avenue.
RM 30	29.36	Drill set in top of rock, the foundation of Clarkson Dorr Building at 96 Forest Avenue, 29 feet southwest of west pavement edge, southeast from street, approximately 0.62 mile northeast of Park Circle near intersection of Hutton Street
RM 31	11.88	BENCH plaque set in concrete at outside doorway of Portland Public Services Building, 55 Portland Street and Franklin Street and Franklin Wharf
RM 32	9.89	Drive rock set in top of reinforced concrete post 10 inches below present ground level, 220 feet south of C. Penguin Company, 127 Marginal Way, and 205 feet south of intersection of Fleet Street and Marginal Way, 37.9 feet southeast of centerline of Marginal Way
RM 33	10.00	Disk set vertically in northeast corner foundation of 2-story brick building, 50 feet southeast of Swamp Street and 8 feet southwest of east corner of building, Saw Tooth Street (railroad station) and 300 feet north of driveway of Portland Terminal Company railroad and Eastman Street
RM 34	22.91	Disk set in sidewalk on west side of Saint John Street and opposite intersection of A Street (5 miles of centerline of Anson A. Nourse) Estate corner, 61 inches northeast and 4.2 feet west of corner of edge of Saint John Street and approximately 17.4 feet from Atlantic Drum
RM 35	12.93	Chiseled X cut, inset in end of fire hydrant on northwest side of Commercial Street, 250 feet northeast of High Street, 12 feet west of Hole No. 20 in eastern flange, 30 x Commercial Street
RM 36	28.24	Drive rock set in top of concrete pedestal mounted northerly side of Interstate 295 Bridge over the Fore River, 217 feet south of Washington Portland (to Ann Arbor, and 29.1 feet west of the centerline of Interstate 295 southbound and 4.1 feet above pavement grade at curb line
RM 37	33.23	Disk set vertically in lower portion of large oval stone wall on west side of Veranda Street, approximately 0.25 mile south of Hannah Lowell Road, 0.5 mile east of intersection of Veranda Street and Hannah Lowell Road, 75 feet south of the northeast of U.S. Route 1 and Interstate 295 and 54.2 feet southeast from edge of Interstate 295 southbound pavement.
RM 38	16.59	Disk set vertically in headwall on the 48 foot concrete pipe culvert, 0.2 mile southeast of Commerce Drive, 20.0 feet southeast of centerline of Commerce Drive, 70 feet southeast of northeast end of culvert, 42.8 feet west from Catholic Church, Saint Peter, 77 Hodgkins Cove Road

[1] National Geodetic Vertical Datum of 1929

KEY TO MAP

- 500-Year Flood Boundary — ZONE B
- 100-Year Flood Boundary — ZONE A1
- Zone Designations[2] — ZONE A3
- Limit of Moderate Wave Action (LiMWA) — ZONE A5
- 500-Year Flood Boundary — ZONE B
- Base Flood Elevation Line (BFE)
- Base Flood Elevation in Feet[2]
- Elevation Reference Mark
- Shaded Zone D
- River Mile

[2] Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year (base) flood elevations and flood hazard factors not determined.
AE	Areas of 100-year (base) flooding where elevations are determined (see (1) and (2)). Flood elevations and flood hazard factors determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet (usually areas of ponding); base flood elevations and flood hazard factors determined.
A1-A30	Areas of 100-year (base) flood elevations and flood hazard factors determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
B	Areas of 500-year flood; areas of 100-year flood with average depths of less than one foot or with drainage areas less than one square mile; or areas protected by levees from 100-year flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas within the coastal flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance and flood plain management purposes only. It does not necessarily show all areas subject to flooding in the community or all flood hazards. Contact your local flood agency for more information.

The boundaries may be revised periodically. Refer to Map Index.

Coastal base flood elevations shown on this map apply only landward of 0.0 NGVD.

INITIAL IDENTIFICATION:
JULY 17, 1986
FLOOD HAZARD BOUNDARY MAP REVISIONS DATE:

FLOOD INSURANCE RATE MAP EFFECTIVE:
JULY 17, 1986
FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP (FIRM) INDEX for zone designations and effective dates for communities shown on this panel.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
PORTLAND, MAINE
CUMBERLAND COUNTY

PANEL 13 OF 17
SEE MAP INDEX FOR PANELS NOT PRINTED

COMMUNITY-PANEL NUMBER
230051 0013 B

EFFECTIVE DATE:
JULY 17, 1986

Federal Emergency Management Agency

Section 20

Blasting

Section 20: Blasting

Given the nature of the site and the proposed project scope it is anticipated that no blasting will be required. Should ledge be encountered during construction, a blasting plan will be submitted.

Sections 21, 22, 23 and 24

Air Emissions
Odors
Water Vapor
Sunlight

SECTION 21: Air Emissions

No unreasonable adverse environmental effect on air quality is anticipated as part of the proposed site development activities. Vehicular traffic will be limited to existing adjacent parking facilities associated with MMC. Heating and ventilation sources for the proposed building expansion will be comparable with other existing commercial units found throughout the MMC campus. The majority of the units associated with the new building will be placed within the basement level of the new building, however, there will be limited HVAC units on the roof of the tall section of the building. This building expansion project does not require an Air Emission License.

SECTION 22: Odors

The proposed site improvements represent a reorganization and expansion to existing uses and will not result in the creation of any significant odors during or after construction.

SECTION 23: Water Vapor

No large-scale water vapor emissions are proposed as part of the removal of the Gilman Street garage and proposed building expansion, therefore, no adverse effect or unreasonable alteration of climate is associated with this project.

SECTION 24: Sunlight

The proposed new building conforms to the massing of the campus. The taller section of the new Congress Street Patient Care Building abuts the tall elevator/stair tower portion of their visitor garage, while the remainder of the building steps down at the edge of the campus. The new building is of a scale that is compatible with other MMC structures and has a vertical presence that is similar to the existing staff garage that it is replacing. The proposed new building will not block access to direct sunlight by neighboring structures that utilize solar energy through active or passive systems.

R

Maine Medical Center
MaineHealth

centered around you

Get on Board!

Maine Medical Center

Transportation Demand Management Program
August 22, 2018



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Introduction

Purpose

The purpose of Maine Medical Center's Transportation Demand Management program, Get on Board, is to reduce the amount of single-occupancy vehicles by enabling and promoting alternative modes of transportation to and from MMC's Bramhall Campus for MMC employees.

Maine Medical Center

Maine Medical Center is a complete health care resource for the people of greater Portland, the entire state of Maine, and northern New England.

Incorporated in 1868, Maine Medical Center is the state's largest medical center, licensed for 637 beds and employing more than 8,000 people – with approximately 2,000 of those employees residing in the City of Portland. Maine Medical Center's unique role as both a community hospital and a referral center requires an unparalleled depth and breadth of services, including the state's only medical school, through a partnership with Tufts University School of Medicine, and a world-class biomedical research center, the Maine Medical Center Research Institute.

Our care model includes the state's largest multispecialty medical group, Maine Medical Partners. Maine Medical Partners provides a wide range of primary, specialty, and subspecialty care delivered through a network of more than 40 locations throughout greater Portland and the southern Maine region.

Maine Medical Center is the flagship hospital of MaineHealth, a 12-member health system touching central, southern, and western Maine and eastern New Hampshire. The collaboration of MaineHealth's members allows greater availability to community health improvement programs, access to clinical trials and research, and shared electronic medical records.

The strength of the health system, anchored by Maine Medical Center, enables its members to invest in shared programs and services that improve the quality of care while reducing costs whenever possible. As a nonprofit institution, Maine Medical Center has provided more than $200 million annually in community benefits, delivering care to those who need it, regardless of their ability to pay.

MISSION, VISION AND VALUES

Maine Medical Center is dedicated to maintaining and improving the health of the communities it serves by:

- Caring for its community
- Educating tomorrow's caregivers
- Researching new ways to provide care

It proudly carries its unique responsibility as Maine's leader in patient care, education and research. MMC is dedicated to the traditions and ideals of not-for-profit healthcare. It provides care to all who seek it.

MMC's efforts to execute its Mission are aimed at achieving a simple, yet powerful Vision: "Working together so our communities are the healthiest in America."

MMC is guided by a set of Values, helping to meet and exceed the expectations of those it is privileged to serve. MMC's Values:

- Patient-Centered
- Integrity
- Ownership
- Excellence
- Respect
- Innovation

MMC Facility Planning

Maine Medical Center recently announced a project that will expand and modernize much of its patient care facilities. Over the next five years Maine Medical Center plans to spend $512 million on the construction, renovation and expansion of inpatient and outpatient facilities and services. The majority of this investment will occur at MMC's main Bramhall campus.

Every aspect of this project is designed around the needs of patients. The project will optimize current bed capacity at, Maine Medical Center, the state's largest hospital and calls for increasing the number of single rooms available to patients as well as replacing surgical and treatment areas with ones that adhere to 21st century standards. In addition, patient rooms will be universal meaning that each rooms can meet the needs of patients at any point during their stay whether they require critical care or acute care services. About $50 million of the total project cost will be invested in outpatient facilities through the hospital's multi-specialty medical group organization - Maine Medical Partners.

The project also involves the replacement of the largest parking garage on campus, a 1,200-space structure used by employees that sits along Congress Street. The need to replace that garage creates an opportunity to reorient the hospital's main entrance to Congress Street, one of the city's main thoroughfares. The hospital's current main entrance faces Bramhall Street in the city's largely residential West End.

The project is organized into three separate site plan descriptions:

- Site Plan #1:
    - Two floor addition to the East Tower housing 64 private universal rooms.
    - Relocation of the helipad which is currently on the employee garage to the top of the East Tower. Patients arriving via the helipad will have a direct vertical connection via elevator to MMC's Emergency Department and trauma services on the first floor of the East Tower.
    - Three floor addition to the visitor garage on Congress St.
- Site Plan #2:
    - New employee parking garage on St John St that will include over 2,400 parking spaces. The location of the new garage is roughly a quarter mile from the main campus and employees will be encouraged to walk during nice weather.

- Site Plan #3:
    - Removal of the current employee parking garage on Congress St.
    - Construction of a new hospital tower with 64 private universal rooms, 19 procedure rooms, and space for an additional 32 private universal rooms. This building will also include a new hospital entrance and drop-off area with direct connection to the visitor garage.

The project is expected to be completed in the Fall of 2022.

Commitment to TDM

MMC has a long-standing history of promoting health outside of and within its organization. The medical center developed a Transportation Demand Management (TDM) program in 2008, becoming one of the first in Maine to publish such a plan.

In 2008, MMC became one of the first in Maine to develop an independent TDM program.

Known as "Get on Board!," the program supports alternative commuting options such as carpool, public transportation, bicycling, and walking. MMC also engages in an extensive campaign to educate employees about the benefits of alternative modes of transportation and the Get on Board! program. Total enrollment in Get on Board continues to increase year after year.

Over the years, MMC has added elements to strengthen the program's offerings. In 2015, for example, MMC installed additional bicycle parking in its South Parking Lot to enhance cycling access to the main areas of the campus.

The following Plan documents MMC's current TDM efforts, planned program enhancements, as well as new TDM programs. The Plan is intended to serve as a living document. Monitoring reports will be submitted annually to the City's Planning Department.

While MMC encourages sustainable commuting practices across its organization, this TDM Plan applies to MMC's main campus in the west end of Portland, ME, where the majority of MMC's staff is located. Presently, the main campus has approximately 4,400 employed individuals on any given week day. Maine Medical Center employs more than 8,000 people throughout Southern Maine, roughly 6,000 of MMC employees work at the Bramhall Campus.

Contributors to this Plan

MMC would like to thank the City of Portland, the West End, Western Promenade, Libbytown, St John Valley, and Parkside neighborhoods, and Vanasse Hangen Brustlin, Inc. (VHB) for contributing to this Transportation Demand Management Plan.

MMC engaged VHB to assist in the creation of this plan. VHB is a national consulting firm specializing in transportation engineering and a leader in the development and management of Transportation Demand Management plans.

Context

Land Use

CURRENT

MMC's Bramhall campus is located at a high point in the west end of the Portland peninsula that is renowned for the Western Promenade—an 18-acre park and national historic landmark designed by the Olmsted Brothers, among others. The campus abuts the Western Promenade in a dense urban setting that serves, in many ways, as a transitional zone between areas with diverse character, land uses, and demographics.

The campus, which serves the entire state of Maine as well as eastern New Hampshire, is located within less than a mile's distance of I-295, which links Portland to destinations across New England. To the north, the campus fronts on Congress St —Portland's main thoroughfare that extends along the spine of the peninsula to Portland's downtown and beyond. The MMC campus is located at the western gateway into the City.

FUTURE

The area surrounding MMC is identified in the City's Comprehensive Plan as an area with transformational potential. MMC's TDM plan aligns with this future vision. As part of the project, MMC will add a new entrance to Congress Street and envisions providing active ground floor uses in new buildings. This change will heighten the level of pedestrian activity on Congress Street, and serve to promote the corridor.

Parking

CURRENT SUPPLY

MMC offers its patients, visitors, physicians, and employees several options for parking. MMC currently controls approximately 2,877 total off-street parking spaces either via ownership or through leases with others that specifically serve the Bramhall Campus. Of the 2,877 spaces, 850 spaces are available for public use by patients and visitors, and 2,027 parking spaces are subscribed to staff and physicians.

TABLE 1: Existing Parking Spaces

		Patient / Visitor	Employee	Total at Facility	Ownership
ON-CAMPUS	Employee Garage	0	1,274	1,274	Owned
850 patient / visitor	Patient / Visitor Garage	480	0	480	Owned
1,538 employee spaces	South Lot	370	0	370	Owned
	887 Congress (Forest St Garage)*	0	178	178	Owned
	7 Bramhall St	0	26	26	*Leased*
	905 Congress St (Sportsman Lot)	0	60	60	*Leased*
OFF-CAMPUS	222 St John St (First Atlantic Lot)	0	283	283	*Leased*
489 employee spaces	181 High St (Gateway Garage)	0	100	100	*Leased*
	993 Congress St (Classic Lot)	0	97	97	Owned
	321 Brackett St	0	9	9	*Leased*
	TOTAL PARKING SPACES	850 Patient / Visitor	2,027 Employee	2,877 Total	

* The Forest St Garage has an additional 222 spaces that are dedicated to medical office staff and patients.

PARKING DEMAND

MMC has continued to witness intensifying demands on the existing parking supply due to increased patient volumes and higher acuity patients with longer lengths of stay. Under current conditions, MMC's staff parking system typically operates at capacity during the weekday daytime hours. When off-site, remote staff parking facilities reach capacity, staff is directed to park on-campus in the Congress Visitor Garage. Some staff members independently choose to park nearby utilizing neighborhood on-street parking, although this is discouraged by MMC.

Patients, visitors, and staff at MMC often comment on the lack of adequate and predictable parking. MMC parking facilities do not have integrated technologies to accurately report parking utilization. Therefore, current demand was estimated using a combination of observed data and comparisons to facilities similar to MMC's Bramhall Campus.

Observations:

On behalf of MMC, VHB conducted on-site parking usage observations in January and March 2017. These months were ideal for parking observations because of the poor weather resulting in increased parking utilization. VHB collected parking count data during peak hours, which included late afternoon, evening, and overnight occupancy and turnover. Parking observations were completed during weekdays when MMC typically sees its biggest parking challenges – Tuesday – Friday. Historically, the highest patient volumes at MMC are on Thursdays and Fridays according to the MMC team responsible for managing parking. High patient volumes coincide with higher volumes of staff. The counts indicate that the parking system typically operates at or above capacity during weekday daytime hours. During the observations, it was difficult for VHB to differentiate staff from patients and visitors. Therefore, a total demand estimate is provided.

The observed data reveals that parking demand at the Bramhall campus among patients, visitors, physicians, and staff total roughly 3,125. MMC parking facilities have capacity of 2,877. The observed

parking demand is almost 110% of supply. The observed parking demand is 4.4% below the expected parking demand (3,264) for a suburban hospital of MMC's size, according to Institute of Transportation Engineers (ITE) parking demand projections.[1] The difference equates to a shortage of 139 parking spaces.

In addition to VHB's observations, the MMC staff responsible for managing parking has estimated the employee parking deficit to be between 200 and 300 spaces.

Comparison to Peer Group:

VHB compared MMC's parking ratio per licensed bed to other hospitals in New England and nationally. MMC's 850 patient/visitor parking spaces equate to 1.33 parking spaces per bed which is low compared to peers. The midpoint patient and visitor parking space/licensed bed ratio among MMC peers is 1.87. It is important to note that based on a review of peer institutions, MMC would need to increase its patient/visitor allocation by 341 spaces, or 40%, to achieve a similar beds-to-spaces ratio as its peers. MMC's 2,027 staff parking spaces equate to 3.18 parking spaces per bed which is also low when compared to other peer institutions. The midpoint employee parking space/licensed bed ratio among MMC peers is 4.38. MMC has 637 licensed beds.

When compared to peers, MMC has a shortage of 341 patient and visitor parking spaces and 763 staff parking spaces.

$$\begin{aligned} &MMC\ Licensed\ Beds\ (637) * \ Comparison\ Group\ Patient\ \&\ Visitor\ Parking\ Space\ per\ Bed\ (1.87) \\ &\quad = Peer\ Equivalent\ Patient\ \&\ Visitor\ Parking\ Spaces\ (1{,}191) \\ &\quad - MMC\ Patient\ \&\ Visitor\ Parking\ Space\ (850) \\ &\quad = \boldsymbol{Patient\ \&\ Visitor\ Parking\ Space\ Deficit\ at\ MMC\ (341)} \end{aligned}$$

$$\begin{aligned} &MMC\ Licensed\ Beds\ (637) * \ Peer\ Group\ Staff\ Parking\ Spaces\ per\ Bed\ (4.38) \\ &\quad = \ Peer\ Group\ Equivalent\ Staff\ Parking\ Spaces\ (2{,}790) \\ &\quad - MMC\ Staff\ Parking\ Spaces\ (2{,}027) = \boldsymbol{Staff\ Parking\ Space\ Deficit\ at\ MMC\ (763)} \end{aligned}$$

Current Demand:

MMC used the observed and peer group data to determine the estimated parking demand.

Based on data available, the estimated current MMC parking demand exceeds patient and visitor supply by approximately 25 parking spaces and exceeds employee parking supply by approximately 220 parking spaces. Therefore, the estimated parking demand in 2017 is:

2017 Estimated Parking Demand
- 875 for patient and visitor parking ($875 = Current\ Patient\ Visitor\ Parking\ Supply\ (850) + 25$)
- 2,250 for employees ($2{,}250 = \ Current\ Employee\ Parking\ Supply\ (2{,}027) + 220$)
- 3,125 total estimated parking demand

The current parking demand for MMC's Bramhall campus is approximately 3,125 parking spaces.

MMC feels that the appropriate metric to measure parking utilization is parking demand per Bramhall campus employee. This metric is ideal because the number of employees will change over time. Other

[1] This approach is consistent with the City of Portland's Technical Manual, which recommends using ITE for parking demand projections. https://www.portlandmaine.gov/2148/TDM-Parking

metrics such as parking space per bed or parking space per square foot would not accurately account for all factors impacting parking demand on campus. This metric allows for changes in both factors – the number of employees and parking demand. In addition, this metric focuses on MMC employees who are the target population of this transportation demand management plan.

MMC's Bramhall campus has roughly 6,000 employees as of 2017. Therefore the current employee parking demand per Bramhall campus employee is 0.375.

$$\frac{Estimated\ Employee\ Parking\ Demand\ (2{,}250)}{MMC\ Bramhall\ Employees\ (6{,}000)} = Employee\ Parking\ per\ Bramhall\ Employee\ (0.375)$$

FUTURE

Looking towards the future, MMC will undertake a project to modernize its Bramhall campus. The project is detailed above and is anticipated to increase patient/visitor and employee parking demand. This demand will be offset by TDM methods described later in this document, along with expansions in its campus parking capacity.

Data Collection

Currently, MMC has a limited transportation mode data collection system. MMC recognizes the need for an improved system. MMC employs a large number of individuals and tracking their commute behaviors will require a system that relies on automatic data collection wherever possible. MMC is exploring options to improve data collection, such as a card reading system, similar to EZ-PASS, in new parking buildings.

In addition, MMC is exploring various commute management platforms to better understand, manage, and influence employee commute behavior. The commute platforms can help raise awareness for alternative transportation choices, engage (and possibly reward) employees, and provide the data and tools to make informed transportation decisions. Many of the platforms also enable employees to participate in commuting challenges with colleagues (e.g. most cycling trips).

MMC has contacted several commute management companies that are used by employers to explore how commuting platforms can enhance MMC's data collection efforts while potentially rewarding its employees. One Seattle-based commute management provider is currently used by organizations, like Seattle Children's Hospital, Delta Dental of Washington, Boeing, and the Bill and Melinda Gates Foundation. Another provider is located in Santa Monica and is used by companies and institutions, such as Google, Patagonia, the University of Maryland, and MIT. Both platforms are mobile and desktop-friendly and allow employees to easily track their daily commutes, while giving employers the ability to manage commuting programs, data, resources, and rewards in one centralized system. These platforms, among others, will be explored as MMC looks to improve its data collection capabilities.

FIGURE 1: Commute Management Platforms



Commute management platforms offer enhanced opportunities to understand employee commuting behavior and potentially incentivize and reward staff who commute by alternative modes of transportation. Many of these platforms are mobile-friendly and offer easy ways in which to track personal commutes.

Source: Luum

Transit

MMC's main campus is located in a section of the City that is served by the Greater Portland Transit system (METRO), which has multiple routes that stop within walking distance of the Medical Center. The campus is also served by the ZOOM turnpike Express route operated by ShuttleBus-ZOOM.

The METRO routes accessible from the Bramhall Campus have varying service spans with buses generally arriving every 30 to 60 minutes. They provide connections to the nearby Portland Transportation Center (PTC) and the Downtown Hub, which are served by additional METRO and regional bus lines. The PTC also serves as the local connection to Amtrak's Downeaster service that runs along the coast between Boston and Brunswick. The closest bus shelter to the hospital is along Bramhall Street, between the Dana Health Education Center and the South Entrance. This stop is served by METRO Route #8, which provides connections to other parts of the peninsula. There are two other nearby bus stops on the corners of Congress St and Gilman St and Congress St and Weymouth St. These bus stops are served by routes #9, #1, METRO's express service BREEZ, and the ZOOM turnpike express. For the most up to date METRO stops and routes, go to www.gpmetrobus.com.

FIGURE 2: Map of Existing Transit Routes and Stops



Bicycle and Pedestrian Infrastructure

MMC understands that all campus users walk at some point to arrive at their MMC destination. To enhance pedestrian accessibility, MMC maintains its network of campus pathways and public sidewalks adjacent to campus. Similar to other medical centers of its size, MMC provides elevated, covered, and temperature-controlled walkways between its parking garages and key campus circulation corridors.

The bike facility network surrounding MMC's campus is fragmented and lacks bicycle infrastructure as illustrated in Figure 7 below. In addition, the hilly nature of the Western Promenade impacts bicycling and walking in this area.

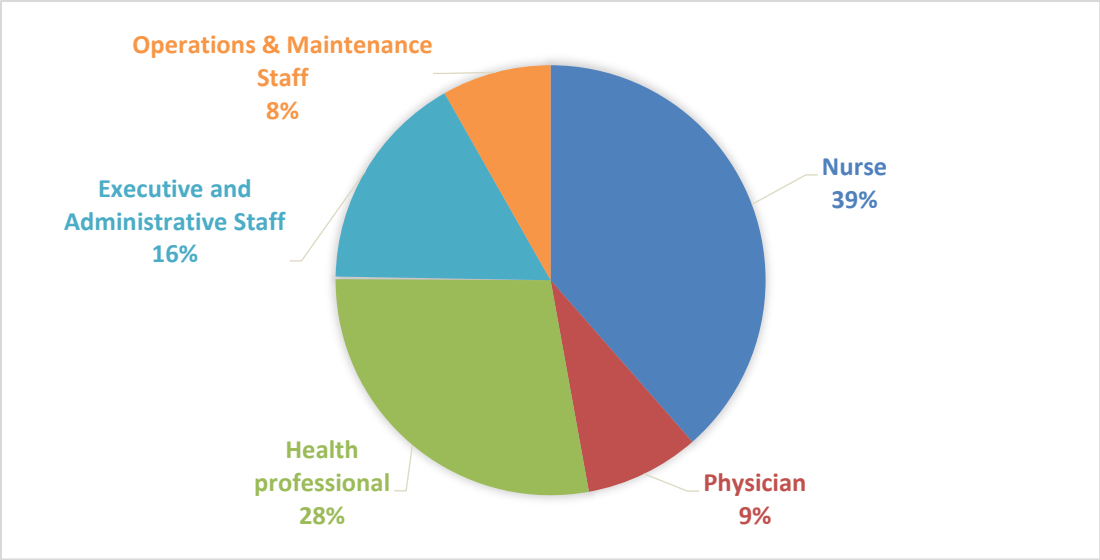
Current Travel Behavior

As part of its efforts to monitor and enhance the Get on Board program, MMC recently conducted a survey of its employees to understand how they commute, any barriers to using alternative transportation, and their interest in other TDM initiatives. The Medical Center also analyzed employee residence data using geospatial analysis tools to better understand employee commuting patterns. The findings from the survey and analysis are summarized below.

Commuting Survey

Approximately 1,600 MMC employees participated in the voluntary survey, administered in February 2017 – nearly a 40% response rate. Approximately 81% of the respondents work at the Bramhall campus. The respondents included a diverse spectrum of employees including operations and maintenance staff, students, executive and administrative staff, health professionals, nurses, and physicians. Figure 3 illustrates the various roles held by the survey participants.

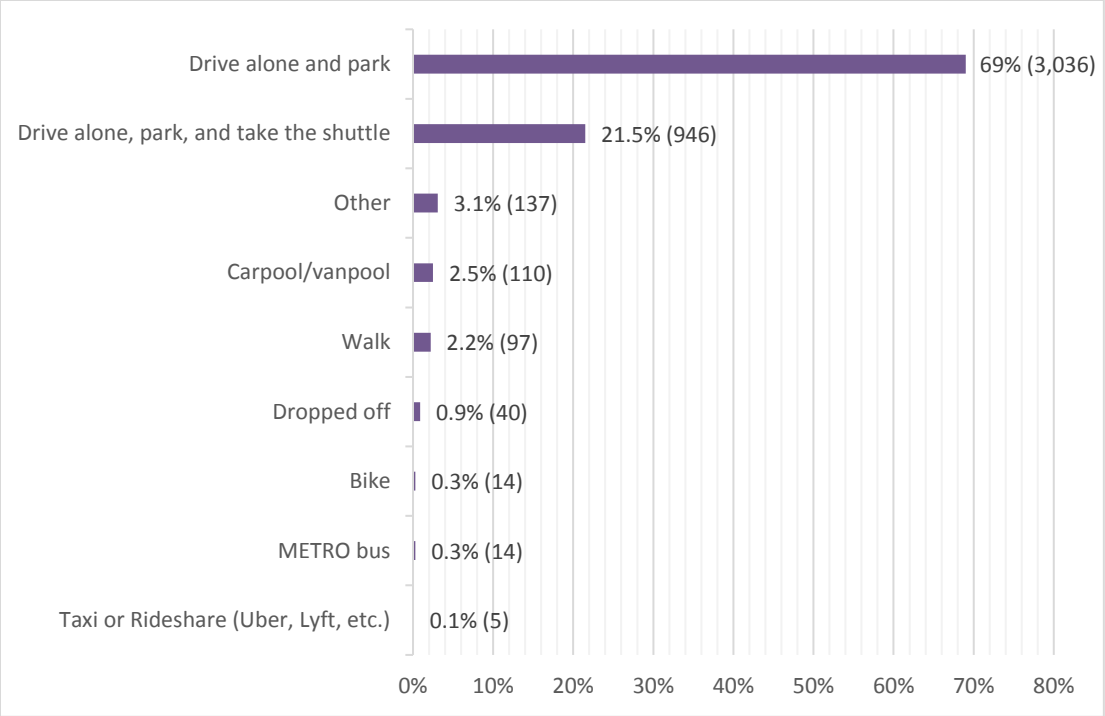
FIGURE 3: Survey Respondents by Hospital Affiliation



The survey found that the majority of employees drive to campus. Among alternative modes, carpooling was the most used mode of travel, followed closely by walking. Figure 4 illustrates the commuting modes of MMC employees.

FIGURE 4: Estimated Employee Travel Mode To and From MMC on an Average Workday

(4,400 estimated employees on campus per average weekday)



The survey also revealed that among Get on Board enrollees who participate in the program, carpooling benefits were the most used benefits, followed by biking benefits and transit benefits.

As the Get on Board program evolves, MMC intends to administer a commuting survey once every two years to track travel trends and to gauge the effectiveness of specific initiatives. The information collected will enable MMC to develop informed, data-based enhancements to Get on Board, providing a greater prospect for program success.

Geospatial Analysis

MMC analyzed the residence locations of its employees to understand employee commuting patterns. The analysis showed that approximately 27% of employees live within a 3-mile radius and approximately 73% of employees live beyond a three mile radius of MMC (See, Figures 5 and 6). Three miles is generally considered a reasonable biking distance by industry standards.

FIGURE 5: MMC Bramhall Campus Employees, Distance to Work by Type of Employee

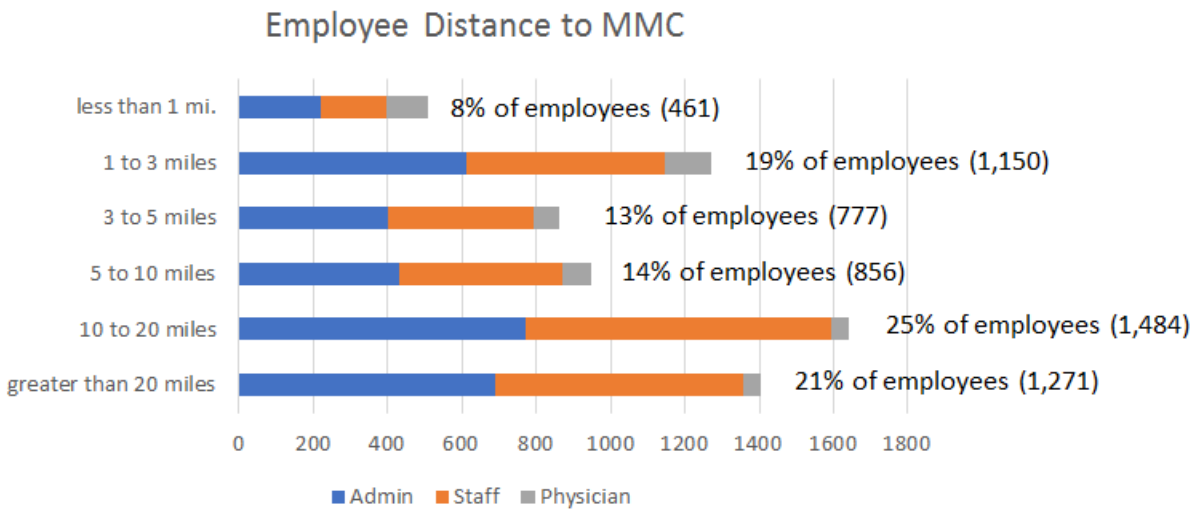
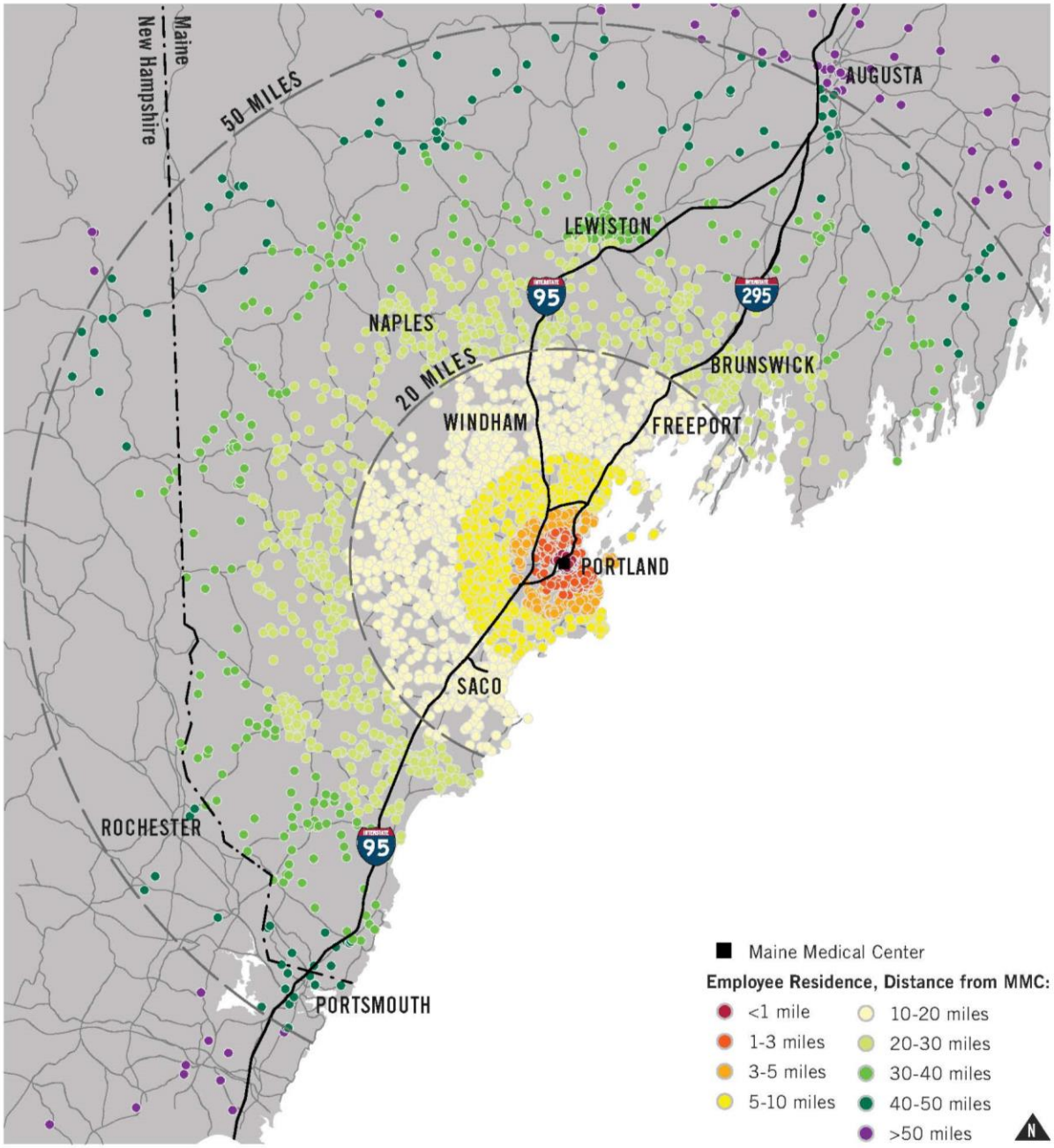


FIGURE 6: Map of MMC Bramhall Campus Employee Residences Illustrating Distance to Work and Travelsheds



Program Goals

The goal of the program is to reduce employee use of single-occupancy vehicles as they commute to work at MMC's Bramhall Campus. At this time, MMC has determined the best way to measure a reduction in employee single-occupancy vehicles is to monitor employee parking demand per employee.

$$Employee\ Parking\ Demand\ Per\ Employee\ = \frac{Estimated\ Employee\ Parking\ Demand}{Bramhall\ Campus\ Employees}$$

As the program grows and evolves and as data collection improves, new goals and metrics may be identified. MMC will also continue to conduct surveys as a way to measure the share of employees who commute by alternative modes of transportation.

VHB conducted a study to determine the existing parking demand for employees (refer to the Context section of this document). VHB's observations and peer group comparison will serve as the baseline for future reduction targets.

Peak parking demand at the Bramhall campus is 4.4% below the expected parking demand for a suburban hospital of MMC's size.

The Get on Board program aims to reduce single-occupancy vehicles on MMC's Bramhall campus through effective TDM measures. These measures include a parking "cash out" program, discounted transit fares, premium parking for carpoolers, and bicycle parking and facilities, among others. Additional details about the program elements are described in the next section. MMC believes the program has had a positive impact on employee travel behavior and has contributed to reduced parking demand over the years.

Based on a review of federal census data, employee travel origin and destination information, existing employee travel mode split, and transportation survey results, MMC believes it can further reduce the portion of employees driving alone to work, thus reducing trip making and resultant parking demands. An initial estimate is that an additional 65 individuals who currently drive to MMC could be shifted into alternative modes of accessing the campus over 5 years. This represents an additional 2% reduction from the ITE parking demand projections.

In consultation with the City, MMC has established the following aggressive short-term, mid-term, and long-term trip reduction goals. These targets are applied to the 2017 baseline identified in the Context section of this document.

	2017 Baseline	Short-Term (0-2 years)	Mid-Term (2-5 years)	Long-Term (5+ years)
Targeted Reduction		2%	4%	5%
Employee Parking Demand Per Employee	0.375	0.367	0.360	0.356

MMC hopes these targets will be achieved through the strategies outlined below. It will endeavor to reduce the number beyond the target identified above through further enhancements or program expansions in the coming years. MMC will continue to monitor parking demand and needs at the Bramhall campus, and re-evaluate its program goals after the initial five year period as needed.

TDM Strategies

Current Get on Board Program Elements

Get on Board is advanced through a range of incentives and the provision of services to support alternative modes. The individual program elements are described below.

Active Transportation

The MMC campus is located in close proximity to existing and planned routes in the City of Portland's growing bicycle and pedestrian network as shown in Figure 7. MMC offers a variety of bike facilities to make bicycle commuters feel welcome and safe. In 2008, MMC installed five (5) strategically-located bike racks and ten (10) bike lockers on its main campus. Three (3) new bicycle racks were added in the vicinity of the Bramhall entrance and in the South Lot in 2016, bringing total storage capacity to 193 bicycles across campus. MMC will conduct a bike rack inventory in July/August 2018 to evaluate the location, condition, and model (or style) of existing bike racks. This assessment will ensure that the racks meet the City's standards regarding the quantity, quality, and distribution of bike parking across the Bramhall campus. MMC understands the city's strong preference for inverted u-racks and bike hitch (or post and ring) racks.

Bicycle and other active transportation commuters also have access to showers facilities across campus, including at Environmental Services, Engineering, the 5th floor of the Maine General Building, and at 229 Vaughan Street.

Beyond on-campus facilities, MMC is an advocate of the City of Portland's Bikeway Network Plan, which will provide bicycle infrastructure on streets adjacent to campus to connect bicyclists with existing and shared use paths.

The City of Portland's latest Comprehensive Plan proposes transforming the streets surrounding MMC into "neighborhood byways", whose design treatments help reduce vehicle speeds and create a safer environment for active transportation users. Neighborhood byway design could encourage walking and biking for employees who live within a reasonable distance of the hospital. MMC also supports ongoing collaboration with the City of Portland, local and regional transit agencies, and neighborhood and advocacy organizations to explore opportunities to improve pedestrian, bicycle, and transit infrastructure and networks serving the Bramhall Campus. The City of Portland has plans to expand the bike lanes illustrated in Figure 7 and add neighborhood byways.

FIGURE 7: Portland Bikeway and Pedestrian Network



Source: City of Portland

In the winter months, some employees choose to leverage their wintertime hobbies, like cross-country skiing, to get to work.



Public Transportation

Under Get on Board (GOB), employees can purchase discounted bus tickets and Shuttle-Bus Zoom tickets conveniently on campus. This is a clear demonstration of MMC's commitment to making the TDM Plan work for its employees and for the City of Portland. Table 2 lists the MMC's current Greater Portland METRO Bus and Shuttle-Bus Zoom discounts provided through "Get on Board!". Note: MMC is dedicated to providing a 100% METRO discount in the short term (as discussed in the recommended Program Enhancements section).

TABLE 2: MMC Transit Discounts

	Regular Price	MMC Sale Price	% Discount
METRO	$13.50	$8.00	40%
S. Portland	$13.50	$8.00	40%
Zoom 10 Ride	$39.00	$29.60	25%
Zoom Monthly	$100.00	$84.50	15%
Zoom Quarterly	$260.00	$197.50	25%

The *Portland Peninsula Transit Study* [2]established several strategies for improving the utilization of transit in Portland. These strategies involved expanding the transit service to development areas, creating more direct connections, and increasing service frequency to compete with drive-alone commute times. The *Portland Transportation Hub Link Feasibility Study*[3] also proposed a route alignment along Congress Street that would increase transit frequency near the hospital. These improvements, if implemented, would highly benefit MMC's campus population in light of the distance that most employees reside from MMC and the fluctuating nature of employees' schedules.

In addition, an MMC representative was recently appointed to the PACTS/GPCOG Transit Committee. MMC is excited to participate in this dynamic group and looks forward to exploring ways in which to improve transit accessibility, connectivity, and reliability in the Greater Portland region.

Carpool

Carpooling is the most popular component of the Get on Board program. Over half of program participants at the main campus take advantage of this benefit. Currently, employees participating in a carpool are given access to preferred parking in an area of the Employee Garage that connects directly to the Main Lobby on the ground floor of the hospital. MMC is planning to relocate its employee parking garage to St. John St. Appropriate incentives that encourage participation in the carpool program have not been fully identified. However, until other incentives are identified, carpool participants will have preferred parking in the St. John St. employee garage.

[2] Portland Transit Committee. *Portland Peninsula Transit Study* (2009), Retrieved from: https://www.portlandmaine.gov/DocumentCenter/Home/View/3383.

[3] Portland Area Comprehensive Transportation System (PACTS). *Portland "Hub Link" Feasibility Study* (2015), Retrieved from: http://www.portlandmaine.gov/DocumentCenter/View/14793 .

Parking Cash Out

Presently, MMC operates a "parking cash out" program that offers employees monetary payments in lieu of a parking space. Program participants submit a form every three months that certifies their use of alternative transportation during the week to commute to work. Upon receipt of a certification, MMC issues the employee a payment equal to the cost of parking at MMC's employee garage. MMC will explore opportunities to help automate this process. For example, commute management platforms (discussed in Data Collection section of the Plan) could allow employees to easily track and manage their daily commutes, potentially reducing the need to submit paperwork.

MMC Shuttles

MMC operates employee shuttle services between the Bramhall campus and off-site parking locations Mondays-Fridays, 6:00 am to 11:00 pm. The shuttles include:

- MMC and off-site parking lots at 222 St. John Street and 995 Congress Street (Monday – Friday, 6:00 AM to 11:00 PM)
- MMC Bramhall campus and the 110 Free Street Office Building (Monday-Friday, 6:00 AM to 4:00 PM, every 20 minutes)
- MMC Bramhall and Brighton Medical Center (335 Brighton Avenue) (Monday-Friday, 6:00 AM to 4:00 PM)

MMC also provides shuttle service for contractors from the parking lot at 993 Congress Street to the hospital. The shuttles provide a predictable alternative to employees commuting between the three sites and serves to reduce vehicular traffic in and around MMC.

Scooters and Motorcycles

The campus provides a designated parking space for scooters and motorcycles on the first floor of the employee parking garage.



UCar

MMC currently dedicates a space in its Congress Street parking garage for a carshare vehicle, as part of the city-wide carshare program called U Car Share. The program allows members to borrow a car by the hour, providing employees who bike, walk, or ride transit to work with additional mobility for off-site meetings. Between mid-March and October of 2016, the UCar program had 96 reservations for a total of 4,105 miles.

Electric Vehicle (EV) Charging

Electric vehicle (EV) charging stations can encourage motorists to commute by electric vehicles, thereby reducing carbon emissions. MMC offers free charging stations for staff and visitors.

TDM and GoMAINE website

The current employee GOB portal is linked to the GoMAINE Commuter Connections website, which is an alternative commuting program operated by MaineDOT. GoMAINE provides commuters with additional commuting resources and benefits that supplement those provided by MMC. These benefits include a carpool ride-matching program and a rewards program for participants.

Pay for Parking

MMC charges its employees no less than $3 per paycheck to utilize MMC parking. MMC employees are paid bi-weekly. Therefore, the annual employee parking cost is $78.

$$\$3\ per\ paycheck\ \times 26\ pay\ periods\ =\ \$78$$

Enhanced Get on Board Program Elements

Program enhancements, discussed below, are anticipated to occur within 1-3 years.

Active Transportation

As part of the modernization of Bramhall, MMC will orient entrances to public streets and provide active ground floor uses where possible to encourage pedestrian activity.

MMC will continue to offer bike storage, bike repair tools, and on-site shower and locker facilities to commuters who choose to bicycle to work.

MMC will also continue its parking cash out program to incentivize current bicyclists. To support "interested but cautious" bicyclists, MMC will seek out local bicycling support organizations to host educational safety seminars and/or adult bicycling skills classes at least once per year on the Bramhall Campus. MMC will also promote rewards programs, such as GO MAINE and Bicycle Benefits, to further motivate increased bicycle commuting.

MMC is exploring additional active transportation incentives through commuter challenges, like a Bike Month Challenge (discussed in Education and Marketing section) with corporate-sponsored giveways, like gift cards to local businesses.

MMC will also consider purchasing Bicycle Benefits memberships for bicycle commuters. The memberships cost $5 (one-time fee) and include a helmet sticker, which provides discounts to dozens of local businesses in the Portland region.

MMC understands that Portland Bike Share, a non-profit organization with a goal to establish a bike share system in the City of Portland, plans to launch a bike share pilot in 2018. MMC has contacted the Executive Director of the North American Bikeshare Association regarding bike share opportunities and has conducted preliminary research on private bike share systems, which, if implemented, could help connect employees at MMC and MaineHealth, located on Free Street.

MMC also recognizes the importance of safe and accessible infrastructure to active transportation. The presence of infrastructure can provide the sense of safety and security that cautious bicyclists seek to spur a change in travel behavior. Additionally, as active modes become more widespread throughout the City of Portland, the visibility of pedestrians and bicyclists in the community can encourage greater participation among MMC employees. MMC supports the City of Portland in its work to improve public rights-of-way and expand its active transportation network.

The City of Portland has proposed a bike lane on Congress St. and a Neighborhood Byway on Bramhall St., both of which are adjacent to MMC's Bramhall campus. These improvements, among others, can help address gaps in the community's active transportation network and could help encourage more MMC employees to bike, walk, skate, and ski to work.





Carpooling/Vanpooling

Given the success of its carpooling program, MMC will continue to provide carpoolers with premium parking in the new employee parking garage. Similar to bicyclists, pedestrians, and transit riders, carpoolers will also continue to be eligible for parking "cash out" benefits. To facilitate the formation of carpools and vanpools, MMC will promote GOMAINE's carpool matching program to facilitate carpool matching.

MMC Shuttle

Once the new employee parking garage is constructed, MMC will redesign its shuttle route system to serve employees parking at the new site. The new parking garage will consolidate previously dispersed parking options for MMC employees. MMC anticipates the new route will reduce traffic congestion into and around the campus area.

UCar

Working with UHaul and the City's Parking Department, MMC will continue to monitor the use of the UCar vehicle presently located in its Congress Street parking garage. In the event an additional car is warranted, MMC will work with its partners in finding a suitable location on the main campus for the storage and use of the additional UCar.

Enhanced Transit Subsidies

To further incentivize transit use, MMC will fully cover the cost of METRO bus tickets (100% subsidy) for employees who elect to use transit as their primary mode of commuting to the campus. If METRO ticket costs change, MMC will address program participation rates and work with METRO to find the best solution to support employees who wish to ride METRO. The type and amount of subsidy will depend upon ongoing discussions with METRO to enhance partnerships (see below).

METRO's electronic fare deployment, scheduled for 2019, represents an opportune time for MMC to launch this enhanced subsidy program. MMC will explore ways in which employees can "purchase" transit passes up front, rather than on a reimbursement basis. This "payment-in-advance" option may be contingent on MMC's capacity to verify transit ridership (e.g. through electronic boarding data) in order to minimize abuse of this benefit. It also possible that electronic fare collection and/or commute management platforms (discussed in Data Collection section), if implemented, could allow staff to easily log trips, potentially helping verify transit usage.

New Program Elements

In addition to enhancements to the initiatives described above, MMC intends to initiate complementary elements to ensure the program's continued success. The strategies are prioritized based on their implementation timeframe.

Short-Term (1-5 years)

The following actions MMC will pursue immediately (some are already underway) with the intention that all programs are fully operational within the 3-year time horizon.

Get on Board! Coordinator

MMC has hired a designated resource who will work to reduce employee single-occupancy vehicles on the Bramhall campus through the implementation, facilitation, and continuing sustainability of Get on Board. The coordinator will track the progress of the TDM program, oversee operations, and identify future opportunities to reduce single-occupancy vehicles on MMC's Bramhall campus by employees. The Coordinator is responsible for program evaluation, data collection, and TDM program updates as required.

Way 2 GO MAINE

In October 2017, MMC participated in GOMAINE's Way 2 GO MAINE program for the first time. Way 2 GO MAINE is a 3-week business to business commuter challenge where employees log commute trips and earn prizes. In the first year participating, MMC ranked 2nd for large companies participating with 1,094 trips logged.

MMC will participate in the Way 2 GO MAINE challenge in the future.

Guaranteed Ride Home (GRH) Program

MMC will implement a Guaranteed Ride Home program to ensure that employees who regularly commute using alternative modes will have transportation in emergency situations.

Pay for Parking

MMC will evaluate employee parking fees in the mid-term. In evaluating future price, MMC will consider the prevailing market price for parking in the surrounding area at the time of implementation, as well as best practices in setting affordable parking prices in the region.

Improving Data Collection Capabilities

MMC will improve its data collection capabilities as described below.

Long-Term Actions (5+ years)

MMC recognizes that the following program elements require partnerships with outside partners and agencies and, as such, will take longer to achieve. MMC has already laid the groundwork for all of these elements and will continue to pursue them in the coming years.

Regional Connections Partnership

Through its TDM Coordinator, MMC will seek to form partnerships with other major employers in the city, including the City itself, to foster a holistic approach to travel management. The partnerships would enable the exchange of TDM-related information and experiences between institutions, and it would foster a community that is focused on promoting alternative transportation in the City of Portland. Such collaborations would afford the opportunity to think regionally and help guide both employer provided or sponsored benefits as well as critical external resources such as METRO transit, sidewalks, and bicycle infrastructure. Opportunities to improve existing transit infrastructure would be a focus of any regional connections partnership.

Supporting Public Transportation

MMC intends to explore a partnership with the METRO to identify strategies for increasing MMC ridership, such as service updates and/or pricing agreements. Service updates could include changes in existing routes, new routes, or alternative route schedules. The formation of a partnership could be mutually beneficial, by providing METRO with feedback for increasing ridership while maximizing the usefulness of the transit system for MMC employees. As MMC formalizes its ties to other local institutions through a regional partnership, its collaboration with METRO could also extend to other employers.

Education and Marketing Strategies

MMC has a number of approaches to raise awareness about the benefits of alternative transportation and opportunities for participating in the Get on Board program. These strategies are integrated into various aspects of the organization's engagement with employees to reinforce the importance of TDM. The new TDM Coordinator provides MMC with an unprecedented opportunity to help educate and inform employees about the hospital's TDM programs.

Sharing TDM Program Information

Information about the Get on Board program is available to all MMC employees via the MMC intranet. MMC's intranet is a place where employees routinely go for information. The Get on Board page provides information about all of MMC's TDM programs as well as links to the GOMAINE.org webpage. MMC is committed to reorganizing information on its intranet site within the first six months following the hiring of the TDM Coordinator.

MMC will develop and deliver information about the Get on Board program using communications best practices that are refined throughout the program's lifespan. Communication methods that are effective will be further refined while elements that are less effective will be reevaluated. Some examples of communication methods include:

- Introducing the program to new employees at orientation: MMC currently shares information about the Get on Board program with new employees during orientation and understands that this information can be overlooked amidst all of the materials that are provided to new employees. MMC will transform its existing TDM orientation brochure into a more graphical, eye-catching pamphlet or postcard. MMC will also consider incorporating a brief TDM presentation at orientation.
- Social media: MMC will use social media as an effective tool to communicate with employees about the Get on Board program.
- Get on Board Booths: To supplement information available on the Get on Board intranet site, MMC will explore opportunities to setup Get On Board booths to help market the program and potentially offer free giveaways, like bike lights or helmets. The booth could be installed and staffed at a high visibility location, such as the hospital's South entrance or outside the future employee parking garage.
- Leveraging Existing MMC Programs: The TDM Coordinator will explore possibilities to leverage (and learn from) other MMC employee programs, such as "Work on Wellness" and Moment to Shine. Work on Wellness (WOW!) allows employees to earn rewards for participating in various health and wellbeing programs, while Moment to Shine allows employees to recognize and reward colleagues for exemplary performance. Moment to Shine, available on the MMC intranet and on iPhone and Android apps, also allows "shining" employees to redeem their rewards through a user-friendly shopping portal. While it is important that the MMC employee programs maintain their autonomy, there could be opportunities for Get on Board to utilize some of the same features, like the rewards portal.
- Branding: There may also be opportunities to rebrand the Get on Board program as MMC looks to add new life to the program.

Get on Board Fair/Seminars

MMC will explore offering educational sessions about the importance of TDM and specific TDM methods such as walking, biking, or riding the bus. Educational sessions will rely on the expertise of local organizations specializing in alternative modes of transportation.

Get on Board Blitz

October is National Rideshare month and the same month of GOMAINE's Way 2 GOMAINE business to business challenge. In the future, MMC will explore ways to increase marketing of the Get on Board program during the month of October, potentially leveraging social media and internal communications vehicles, such as electronic newsletters.

Commuter Challenges

MMC will explore internal commuter challenges, such as a bicycle commuter challenge in the month of May, which has been nationally designated as "Bike Month" by the League of American Bicyclists. As discussed in the Data Collection section, commute management platforms could help MMC manage these friendly competitions and allow participants to log commutes and view leaderboards. MMC will contact businesses regarding potential sponsorships for the monthly commuter challenges.

Comprehensive Data and Goal Monitoring

MMC understands from its prior experience with TDM initiatives that achieving change is an iterative process that involves tracking the effectiveness of its programming and making mid-term adjustments if necessary to improve program effectiveness. MMC will collect and analyze data on a regular basis to monitor progress towards its TDM targets. The data would be collected through a range of instruments and will be used to make annual comparisons and to identify trends, and areas for growth. MMC will submit monitoring reports that include a summary of the data monitoring results, comparisons of the data to trip reduction targets, and adjustments to programs as needed.

Parking Utilization Data

MMC is exploring options to improve data collection in the new employee parking garage. The most likely option utilizes EZ-Pass technology to automatically collect information about the vehicles in the garage.

In addition, MMC plans to install a parking guidance system in the new employee garage, as well as a controlled-access parking system in the visitor parking garages. Together, these systems will allow MMC to monitor occupancy in each garage and to collect data regarding who uses the parking facilities and the temporal fluctuations in parking demand across various periods of time. These systems will provide quantifiable information to assist in determining future utilization of MMC's parking facilities. MMC will utilize this parking usage data to assess its parking arrangement twice every year.

MMC has received feedback about inappropriate use of its parking garages. MMC hopes to reduce the misuse of its garages in the future by implementing these monitoring and controlling systems.

Employee Surveys

MMC conducted an employee travel survey in 2017 to understand employee commuter preferences and intends to administer the survey once every two years going forward. The survey is administered electronically using a survey platform and produces data that MMC (or a third party) can use to identify changes and progress from one period to the next. The surveys seek information about the following topics to gauge the effectiveness of initiatives:

- TDM program participation rates
- Individual program effectiveness
- Barriers to TDM use
- Changes in commuting preferences
- Marketing effectiveness

Employee Surveys

As discussed earlier, MMC is also exploring contracts with various commute management platforms to help encourage, track, and incentivize alternative commutes. These platforms can provide robust data related to commuting patterns, trends, and changes.

Reporting Frequency

MMC will submit annual monitoring reports that will include a summary of progress toward targets established in the TDM Plan.

Conclusion

The purpose of Maine Medical Center's Transportation Demand Management program, Get on Board, is to reduce the amount of employee single-occupancy vehicles at MMC's Bramhall Campus by enabling and promoting alternative modes of transportation to and from MMC's Bramhall Campus for MMC employees. The program has aggressive short- and long-term goals. While the program's success partially relies on a cultural shift away from personal vehicles, Maine Medical Center is committed to exploring and identifying the most impactful TDM strategies to reduce single-occupancy vehicle travel and encourage alternative commuting choices.

MMC NEIGHBORHOOD ADVISORY COMMITTEE CHARTER
Expansion Group Discussion Questions 12/7/18

RR

DRAFT Charter Provision	Questions
Section 1: Objective	
1.1 Charter Background/ Overview Maine Medical Center ("MMC") sits at the intersection of several diverse residential and mixed-use neighborhoods: the West End, the Western Promenade, Parkside, St. John/Valley, and Libbytown. Prior to the adoption of the Institutional Overlay Zone, representatives from neighborhood organizations, MMC, and the City of Portland began meeting regularly to discuss MMC's facility modernization plans. To maintain and improve dialogue, collaboration, and transparency between these stakeholders, this Neighborhood Advisory Committee ("NAC") Charter was developed and finalized in December 2018.	
1.2 Neighborhood Advisory Committee Purpose MMC, its adjacent neighborhood organizations, and the City of Portland recognize that continued mutually respectful, transparent, and consistent communication benefits all members involved in the Neighborhood Advisory Committee. Furthermore, all stakeholders engaged in this charter share a common interest in preserving and improving the health, wellness, and livability of their respective neighborhoods. To these ends, the NAC will: 1. Support meaningful, productive communication between MMC, Neighborhood organizations, and the City of Portland, helping all members develop and maintain a healthy, transparent, and respectful working relationship 2. Promote the health, wellness, and livability of MMC and the surrounding neighborhoods by: – Collaboratively problem-solving around hospital-neighborhood concerns – Actively facilitating the development of hospital-community partnerships – Jointly administering MMC's Caring Community Grant program to support mutually agreed upon neighborhood proposals addressing initiatives identified in MMC's Institutional Overlay Zoning. – Encouraging the sharing of information amongst members and the Portland residents who live in the member neighborhoods. – Providing a forum for feedback from neighborhood residents through NAC membership.	
1.3 NAC Membership The Neighborhood Advisory Committee will consist of the District 2 City Councilor, plus two representatives each from the following organizations: – The West End neighborhood – The Western Promenade neighborhood – The Parkside neighborhood – The St. John/Valley neighborhood – The Libbytown neighborhood – MMC In the case that a member may not attend, a substitute may be assigned at the discretion of the member organization. The City of Portland's Department of Planning and Urban Development will not serve as a formal member organization, but will participate in NAC meetings.	1. Should the District 3 Councilor be involved?

1.4 NAC Member Role and Responsibilities NAC members are responsible for: – Attending all NAC meetings – Engaging in productive, mutually respectful, and transparent dialogue – Disseminating information from the NAC to each member organization in a timely manner – Gathering feedback and providing input to the NAC on the part of each member organization	2. Do these responsibilities seem equitable enough?
Section 2: Organizational Structure & Procedures	
2.1 Organizational Structure The NAC will have two co-facilitators, appointed to different member organizations on a rotating one-year basis. No member or organization will serve in the co-facilitator role more than once in a three-year period. The City Councilor will not act as co-facilitator. The NAC will designate a notekeeper, who will hold the appointment continuously until otherwise decided by the committee.	3. Is this the right approach to facilitation? 4. Is one year too long for an appointment? How would appointments rotate? 5. Should MMC be defined as the notekeeper in the charter? Do we need this level of specificity?
2.2 Procedures *Meeting Frequency:* The NAC will meet at least quarterly at a mutually agreeable time and location specified by the committee co-facilitators. If a member deems that an additional meeting is necessary, that member may request a meeting by contacting the committee co-facilitators. The co-facilitators will make all reasonable efforts to arrange a meeting within two weeks of the request. During periods of MMC construction, the NAC will meet monthly unless otherwise decided by the committee. *Agenda Setting:* The co-facilitators are responsible for developing a draft agenda, circulating the draft among committee members, integrating member input, and providing a final draft agenda prior to meetings of the NAC. *Meeting Materials:* Should a request for feedback on a particular item be included on the agenda, committee members will ensure that sufficient time for such feedback is provided (i.e. materials shall be provided in advance of the meeting and feedback collected at the meeting, or materials distributed at the meeting and feedback collected subsequent to the meeting). *Meeting Guests:* Any committee member may request permission of the co-facilitators to invite a guest speaker or presenter to the next scheduled meeting and to place the same on the agenda for such meeting. If a guest request is relevant to an agenda item, permission will be granted freely. *Meeting Facilitation:* Meetings will be facilitated by the co-facilitators. *Meeting Minutes:* The notekeeper will keep meeting minutes, including documentation of action items resulting from meetings. The notekeeper will distribute meeting minutes to all parties within seven days of the meeting. Meeting minutes will also be posted on MMC's website. As they become available, neighborhood association meeting minutes will also be shared with the committee.	6. Should meetings always be held at MMC, or should the location and time be the choice of the co-facilitators? 7. Should the charter require that all materials shared at meetings be provided to all members electronically? 8. How long should members have to gather feedback on materials (i.e. how far in advance of meetings should materials be required?) 9. Should meetings be recorded and archived?

Section 3: Scope	
3.1 In Scope Within three months of the NAC's first yearly meeting and annually thereafter, the committee will develop a set of mutually agreed upon goals to work toward over the subsequent year. These goals will be directly tied to the NAC's purpose, including: – Supporting positive and productive communication – Collaboratively problem-solving around hospital-neighborhood concerns – Jointly pursuing opportunities for hospital-neighborhood partnerships focused on health, wellbeing, and livability of neighborhoods, measuring outcomes if appropriate On an annual basis, the NAC will be responsible for soliciting, reviewing, and selecting the recipient of MMC's Caring Community Grant. Within three months of its first meeting, the NAC will develop a framework for administering the grant program, including program goals, selection process, and guidelines, using the Institutional Overlay Zoning as a guide.	10. Does the charter speak sufficiently to conflict resolution and ways to hold members accountable? 11. How should the details of the 'framework' for the grant program be established? 12. How should the framework for administering the grant funding be 'adopted'?

General Questions	13. What is the process for adopting the charter?

WRITTEN SUBMISSION 18 – PRESERVATION OF SIGNIFICANT NATURAL FEATURES
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

S

THER ARE NO SUCH FEATURES WITHIN THE PROJECT SITE.

WRITTEN SUBMISSION 20 – SITE LANDSCAPING
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

U

THE LANDSCAPE PLAN FOR THE NEW BUILDING IS DESIGNED TO COMPLIMENT THE UNIFORMITY AND SIMPLE NATURE OF THE BUILDING DESIGN.

THERE ARE FOUR LANDSCAPE ZONES WITHIN THE SITE :

1. PASSENGER ARRIVAL AND DEPARTURE PLAZA – THIS AREA WILL BE COMPLETELY IN SHADE. THE CENTER ISLAND WILL BE PLANTED WITH EUROPEAN WILD GINGER WITH ACCENTS OF TRILLIUM. THESE SELECTIONS WILL PROVIDE EVERGREEN COLOR ALL YEAR AND WILL NOT OBSTRUCT VISIBILITY IN THE PLAZA.
2. TRIANGLE PLANTER BELOW RETAINING WALL – THIS AREA INCLUDE ENGLISH IVY, PLANTED AT THE BASE OF THE RETAINING WALL, AS WELL AS EUONYMUS GROUNDCOVER (EVERGREEN), WITH VERTICAL ACCENTS OF FEATHER REED GRASS.
3. TWO TRIANGLE PLANTERS AT THE PUBLIC PLAZA – THESE AREAS REPEAT THE USE OF EUONYMUS GROUNDCOVER WITH ACCENTS OF FEATHER REED GRASS, AFFORDING A SIMPLE YET ELEGANT FOREGROUND TO THE VERTICAL BUILDING BEYOND.
4. THE GREEN ROOF WILL BE PLANTED WITH GREEN AND RED SEDUM, LOWBUSH BLUEBERRY, AND TALLER SWITCH GRASS ALONG THE PATIENT BEDROOM EDGE OF THE ROOF.

WRITTEN SUBMISSION 21 – PARKING LOT LANDSCAPING
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

V

THIS SUBMISSION ITEM IS NOT APPLICABLE TO THIS APPLICATION.

W

WRITTEN SUBMISSION 22 – STREET TREES
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

THE LANDSCAPE PLAN INCLUDES (5) NEW HONEY LOCUST TREES ALONG CONGRESS STREET. HONEY LOCUST TREES ARE SUITED FOR THE URBAN CONDITIONS AND ARE FOUND ON MANY PORTLAND STREETS TODAY.

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

X

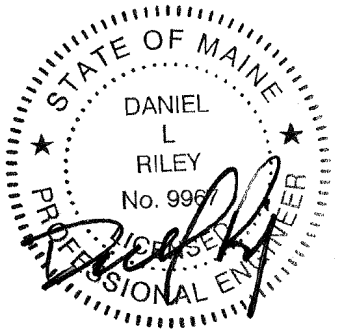
STORMWATER MANAGEMENT PLAN

Maine Medical Center
Congress Street Building
Portland, Maine

Prepared for

Maine Medical Center
22 Bramhall Street
Portland, ME 04102

October 30, 2018



10/30/2018

STORMWATER MANAGEMENT PLAN

Maine Medical Center Congress Street Building
Portland, ME

Introduction

This Stormwater Management Plan has been prepared to address the potential impacts on stormwater runoff associated with the construction of a new hospital building on Maine Medical Center's Bramhall Campus.

The Congress Street Building project will consist of a new 6 story, 264,300 square foot hospital building with an approximately 43,900 sf footprint area. The proposed building replaces the existing employee-parking garage located at the corner of Congress Street and Gilman Street and includes redevelopment of the site along Congress Street. The total area of the campus affected by the work, as shown on the exhibits attached to this report is approximately 1.95 acres.

As discussed in this report, the Stormwater analysis and treatment/detention system has been designed to detain and treat rooftop runoff from the existing Visitors Parking Garage adjacent to the new building. Providing treatment from an additional 26,400 sf of parking deck that currently drains un-detained into the combined sewer system in Congress Street.

The impact of the new building is mitigated in part by redeveloping an existing parking structure with the new building whose rooftop includes green roof components.

Development on the Maine Medical Center Bramhall Campus is subject to the Maine Department of Environmental Protection (MDEP) Site location of Development Act and Chapter 500 Stormwater standards, reviewed by the City of Portland under its delegated review authority from MDEP. Based on the proposed development, the project is subject to the MDEP Chapter 500 Basic, General, and Flooding standards, including the redevelopment standards for a Site Law project, as incorporated into the City of Portland Land Use Ordinance and Site Plan review regulations.

The site is located in an area served by a combined sewer system where the City of Portland seeks to mitigate and reduce combined sewer overflow (CSO) events. The design storm events for CSO evaluation is a 1" rainfall, 24-hour design storm (CSO Storm).

Based on discussions with the City staff, the stormwater analysis and the proposed detention/treatment system has been designed to reduce the rate of runoff from the project site including both the new Congress Street Building and the existing Visitor Garage, to the greatest extent possible during this 1" CSO Storm event.

The proposed erosion controls, inspection and maintenance criteria, and the stormwater management systems have been designed to meet MDEP and City of Portland requirements. The proposed design includes a subsurface sand filter Best Management Practice (BMP) which has been designed to meet

the system sizing and treatment requirements for the new building's and redevelopment project standard. The system has been expanded to the extent practicable and to provide treatment for runoff from the adjacent parking garage.

The proposed design meets the applicable standards for system volume, but due to the limited site area, incorporating the runoff from the Visitor Garage will require waiver of the system surface area design criteria. The waiver is simply a trade-off to allow detention of existing runoff volume to address the CSO flows reduction desired by the City.

Permitting and Analysis History

A comprehensive stormwater analysis of the Maine Medical Center Bramhall Campus was completed in January 2004 as part of the Site Location of Development review, by the City of Portland, of the Bramhall Campus Expansion project. This project constructed from 2004-2007 was significant redevelopment of the campus including the construction of the Visitors Garage, Central Utility Plant and East Tower and renovations of the Emergency Department. The 2004 project also included the reconstruction and re-alignment of Crescent Street and separation of storm drainage in Gilman Street.

The redevelopment project fully separated stormwater runoff from the combined sewers within hospital property the campus and the immediately adjacent streets. The separated runoff re-enters the City's combined system at 7 locations abutting the site to facilitate future separation projects that may be undertaken by the City as part if its CSO program.

The 2004 redevelopment project included the installation of two hydrodynamic separator treatment units and separated runoff from approximately 6.3 acres of the campus and Gilman Street (uphill of A Street) the municipal separated storm drain in A Street, fully utilizing the design capacity of the A Street Storm drain.

The 2004 analysis is presented in a Stormwater Management Report dated January 2004 attached to the Maine Medical Center's January 2004 Site Location of Development Application on file in the City of Portland Planning office.

The 2004 post-development analysis subdivided the campus and tributary offsite areas into 20 onsite and offsite sub catchment areas. These sub catchment areas are the basis of the current study's pre-development analysis. The full campus watershed plan is attached for reference, identifying the sub catchments affected by the currently proposed redevelopment.

The discussion of our current analysis focuses on those sub catchments and study points affected by the proposed project, the analysis of off site areas of the campus remains unchanged from the 2004 analysis with exception of the design rainfall events which have been updated in accordance with the design rainfall adopted by the MDEP Chapter 500 regulations in August of 2015.

Site Existing Conditions

The project site includes the area occupied by the hospital's existing employee garage at the corner of Congress Street and Gilman Street. The runoff evaluation area includes portions of Congress Street to the north and east, Gilman Street to the west and the access road between the existing garage and the LL Bean Wing of the hospital to the south.

The campus located in a densely developed urban setting consisting of hospital and office buildings with their associated parking and landscaped areas, public roadways, and multi-family residential housing. The undeveloped areas of the site consist of steeply sloped land abutting Congress Street and Gilman Street. Ground cover in this area consists primarily of grass, brush and evergreen tree growth.

The subject site is located at a high point in the west end of the Portland Peninsula. Runoff from the project site is collected through a series of roof drains and catch basins and conveyed to the combined sanitary/stormwater sewers located within public streets abutting the site. There are currently two Downstream Defender units, installed in 2005, which provide stormwater quality treatment to runoff from the site. One Downstream Defender unit is located in the Visitor Garage on Congress Street, tributary to the municipal combined sewer system that runs down Forest Street to Park Avenue. The outfall of the Visitor Garage's downstream defender will be redirected to a proposed detention and treatment system associated with new Congress Street building to provide peak flow mitigation during the CSO design storm.

The second Downstream Defender unit is located along Gilman Street, in front of the Central Utility Plant, treating stormwater before it enters the municipal separated storm drain in A Street.

Soils

Soil classifications within the project area were referenced from the Cumberland County Medium Intensity Soil Survey. The site is primarily comprised of Hinckley gravelly sand loam. The project geotechnical evaluation report indicates significant depths of granular fill overlaying glacial till. For modeling purposes of this report the soils were considered hydrologic soil group A consistent with the Cumberland County soil survey.

Proposed Development

Maine Medical Center proposes to construct a new 6 story, 264,300 square foot hospital building with an approximately 43,900 sf footprint area. The new building incorporates green roof elements and replaces the impervious surfaces associated with the existing employee-parking garage.

The Visitors Garage east of the site will remain. The drainage system from the Visitors Garage will be modified for redirect runoff to the proposed building's stormwater treatment system. The stormwater analysis was developed to consider treatment for both the proposed hospital expansion and the existing parking garage.

The site is subject to the Chapter 500 redevelopment standards as a Site Law, although the proposed development will result in the following:

Total Developed Area Subject to Treatment Standards	= 1.53 acres
Total Post Development Impervious area	= 1.19 acres
Redevelopment Impact Rating	= (- 0.5)
Redeveloped Area Requiring Treatment (50%)	= 0.77 acres
Redeveloped Area Receiving Treatment	= 1.95 acres

Regulatory Requirements

City of Portland:

The project is subject to the City of Portland's land use ordinance and Technical Standards applicable to a project with an existing Site Location of Development Permit and reviewed under the City's delegated review authority. The City's standards incorporate the MDEP Chapter 500 standards as follows.

Maine Department of Environmental Protection (MDEP)

MDEP Rule Chapters 500 and 502 describe stormwater management requirements for new development projects. These rules describe performance standards divided into five major categories: Basic Standard, General Standard, Phosphorous Standard, Urban Impaired Stream Standard, and Flooding Standard. The following sections describe how this project will address these stormwater management performance standards.

Basic Standard: A project must meet basic standards if it disturbs an area greater than one (1) acre. As this development will disturb approximately 1.53 acres, it must meet the basic standard. The standard includes various erosion and sedimentation controls, inspection and maintenance procedures, and general housekeeping requirements.

General Standard: A project is subject to the general standard if it results in the creation of one (1) or more acres of impervious area or developed areas greater than five (5) acres. As this project will include approximately 1.19 acres of impervious area, it must meet the general standard, including provisions in the General Standards for Redevelopment projects.

The redevelopment standard applicable to this project is outlined in the Chapter 500.4.C(2)(d). This standard establishes treatment requirements based on a pre and post development pollutant impact rating which establishes a sliding scale of the percentage of Developed Area which must be treated. For Site Law projects, the scale ranges from a minimum of 50% of the developed area to a maximum treatment equal to a new development.

The redevelopment calculations for the current project indicates that a minimum of 50% of the site's redevelopment must be treated. The treatment system proposed exceeds the minimum requirement

as a stand alone project including the Congress Street building and significantly exceeds the minimum standards by providing treatment for the Visitor Garage runoff.

Standard BMPs have been defined by the MDEP and are described thoroughly in their publication Stormwater Management for Maine: Best Management Practices manual, as revised March 2016.

Phosphorous Standard: A project must meet the phosphorous standards if located within a lake watershed. As this project is not tributary to a lake watershed, it is not subject to the phosphorus standard.

Urban Impaired Stream Standard: A project must meet the urban impaired stream standards if located within an urban impaired stream watershed. As this project is not tributary to an Urban Impaired Stream as defined by MDEP Chapter 502, this project is not subject to the urban impaired stream standard.

Flooding Standard: A project must meet to the flooding standards if it creates impervious areas greater than three (3) acres, or developed areas greater than twenty (20) acres. This project includes approximately 1.19 acres of impervious area; however, the City of Portland Technical Manual Section II-C states that all Level III site plans are required to meet the Maine DEP Chapter 500 flooding standard.

City of Portland Combined Sewers

In addition to the Stormwater Management provisions of the Land Use Ordinance and Technical Standards, the project is located in an area served by a combined sewer system where the City seeks to mitigate the rate of flow in the system that contribute to Combined Sewer Overflow (CSO) events. Discussions with the City Public works department in July 2018 have defined the CSO storm event to be a 1" rainfall event modeled using a 24-hour duration Type III storm distribution. The City has requested that the proposed treatment system be designed to mitigate to the extent practicable the rate of runoff from the site during this storm event, and to detain if practicable the runoff from the existing parking garage.

Quality Treatment

To meet the stormwater quality treatment requirements for the site, a subsurface sand filter BMP and a vegetated roof BMP are proposed to treat runoff from proposed development.

A subsurface sand filter utilizing a Cultec pretreatment row and ACF R-Tank detention modules is proposed to treat and store runoff generated from the roof surface of the proposed Congress Street building. Runoff from the roof will be collected in the building's roof drainage system and directed to the subsurface sand filter installed beneath the paved area of the proposed main entrance. The treated stormwater will discharge to the existing combined sewer at a new Manhole in Congress Street, tributary to Study Point C2.

The proposed subsurface sand filter has been sized based on chapter 7.3 of the Maine Department of Environmental Protection (MDEP) BMP Manual: Subsurface Sand Filters, to provide adequate treatment for the water quality volume, pretreatment of the one-year storm using an inlet control structure and isolator row, and detention for larger storm events.

Redevelopment standards apply because the proposed building will replace existing buildings and pavement areas. After completing the calculations outlined in §4.C(2)(d) of Chapter 500, the ranked impact change due to redevelopment is calculated to be -0.5. Because the project is subject to an existing Site Law Permit the minimum level of treatment required 50% of the redeveloped area.

The redevelopment impact ratings are included in Attachment A to this report.

Also included in Attachment A are tables summarizing the impervious and developed areas for the proposed development and the BMP measures treating these areas. The conclusion is a tabulation of the effective treatment percentages for the proposed development. The results of this tabulation indicate the following:

- The post-development area subject to treatment standards includes 1.53 acres of developed area on the Congress Street building site. This area is comprised of approximately 1.19 acres of impervious area (rooftop, driveway and sidewalk areas) and 0.34 acres of landscaped areas.

- The redevelopment standard requires treatment for 50% of this developed areas for a minimum of 0.77 acres.

- The total area receiving treatment is approximately 1.95 acres of developed area including the new Congress Street Building roof and entrance driveway area (1.34 acres) and the Visitor Garage (0.61 acres).

The redevelopment standard requires treatment for 50% of the new developed areas. As such, the site is required to provide treatment for a minimum of 0.77 acres. The total area receiving treatment is approximately 1.95 acres or 128% of the required area.

<u>Stormwater Treatment System</u>

A subsurface soil filter system is proposed below the Congress Street building's entrance plaza at Congress Street is proposed to provide Stormwater Quality and Quantity Treatment. The system presented on the plans is based on R-Tank chambers with Cultec chamber isolator rows for pre treatment

The system sizing criteria is provided in Attachment A to this report and summarized as follows:

Storage Volume Required	= 5,829 cf
Storage Volume Provided	= 5,949 cf
Surface Area Required (Congress Building only)	= 2,564 sf
Surface Area Required (Congress Building and Visitor Garage)	= 3,883 sf
Surface Area Provided	= 3,134 sf

Methodology:

In order to evaluate drainage characteristics as a result of the proposed development activities, a quantitative analysis was performed to determine peak runoff rates in the pre-development and post-development conditions. The evaluation was performed using the methodology outlined in the USDA Soil Conservation Service's "Urban Hydrology for Small Watersheds - Technical Release #55 (TR-55)". HydroCAD computer software was utilized to perform the calculations.

The peak runoff rates were calculated using a 24-hour duration storm event with a Type III rainfall distribution. The rainfall amounts for Cumberland County have recently been updated and the following 24-hour duration rainfall amounts were used for this report:

Storm Frequency	24-hr Duration Rainfall (in.)
CSO Storm	1.0
2-yr	3.1
10-yr	4.6
25-yr	5.8

Twenty sub catchments were analyzed in the pre-development condition, and twenty-two watersheds in the post-development condition. The pre development sub catchment delineations are based the 2004 study post-development watersheds modified to reflect site improvements constructed as part of the 2004-2007 Bramhall Campus Expansion project construction along with record drawings, and field surveys of the drainage infrastructure.

Sub catchment delineations along the hospital building rooftops are based on visible roof drain locations and record design drawings. Due to the age of a number of buildings, records indicating the locations of roof drain connections to the surrounding sewer system are not available. In these cases, the assumed watershed delineations were made based observations of the rooflines and the surrounding topography and sewer infrastructure.

Five Study Points, identified on the attached watershed plans and hydrologic model output as points SP-C1 through SP-C5 have historically been used to evaluate pre and post-developed runoff conditions from the campus. The Study Points represent locations where stormwater runoff, from the project site, enters the public drainage infrastructure system. In most cases, the capacity of the existing combined sewers is small relative the area draining to them under existing conditions. In these cases,

the study points represent the total stormwater discharge at the study point including both gutter flow and flow into the sewer.

Of these study points only two SP-C2 and SP-C3 are affected by the proposed redevelopment.

Study Point SP-C1 represents the point where stormwater runoff from the site enters a combined sewer at the intersection of Wescott Street and Crescent Street. The study point represents runoff at a manhole identified as DMH-25868 on the project plans. The sewer outlet from this manhole is a 12" cement line that drains in a westerly direction along Crescent Street, eventually draining to Park Avenue via sewers in Ellsworth Street, Congress Street and Weymouth Street.

Study Point SP-C2 represents the point where runoff from the existing Maine Medical Center parking garage, enters a combined sewer at the intersection of Congress Street and Forest Street. The study point represents runoff at a manhole SMH-13952 on the project plans. The sewer outlet from this manhole is an 18" reinforced concrete pipe that drains in a northerly direction along Forest Street to Park Avenue.

Study Point SP-C3 represents the point where runoff from areas of the project site east of the existing visitor garage enters the combined sewer system at the intersection of Gilman Street and Congress Street. At this point runoff within the sewer system discharges in a northerly direction along Gilman Street to Park Avenue. Runoff in the roadway that bypasses the catch basins at the intersection discharges in a westerly direction along Congress Street to St. John Street.

Study Point SP-C4 represents at the intersection of Gilman Street and A Street where runoff from areas of the site including the existing emergency room parking area, L.L. Bean wing, and service areas abutting the central utility plant is directed to the A Street storm drain. A Downstream Defender stormwater treatment system was installed in 2005.

Study Point SP-C5 represents runoff at the intersection of Ellsworth Street and Wescott Street. Runoff currently enters the combined sewer system via manholes in Ellsworth Street and drains in an easterly direction along Ellsworth Street towards its intersection with Congress Street.

The areas and times of concentration of the post-development watersheds vary from the existing conditions based on the proposed site development. Due to the highly-developed nature of the site, the time of concentration in some watersheds is less than six minutes. A minimum time of concentration of six minutes was used in these cases.

Table 1 summarizes the results of the hydrologic analysis of the project under pre-development and post-development conditions.

Table 1 Stormwater Peak Discharge Summary Table									
Study Point	2-Year Storm			10-Year Storm			25-Year Storm		
	Pre (cfs)	Post (cfs)	Diff. (cfs)	Pre (cfs)	Post (cfs)	Diff. (cfs)	Pre (cfs)	Post (cfs)	Diff. (cfs)
SP-C1	1.28	1.28	0.00	2.39	2.39	0.00	3.31	3.31	0.00
SP-C2	6.45	3. 59	-2.87	9.14	6.73	-2.41	11.23	10.91	-0.32
SP-C3	1.72	1.53	-0.19	4.28	4.05	-0.23	5.76	5.21	-0.55
SP-C4	14.04	13.78	-0.26	25.22	24.94	-0.28	34.61	34.33	-0.28
SP-C5	1.60	1.60	0.00	3.01	3.01	0.00	4.07	4.07	0.00

The results of the stormwater modeling at Study Point SP-C1 to SP-C5 indicate that the peak rates of runoff in the post-development condition will be less than the pre-developed condition for the 2-year, 10-year, and 25-year storm events.

Study points SP-C2 and SP-C3 were further evaluated to determine the impact on peak flow rate and runoff duration from the project site during the 1" CSO Storm event. The proposed subsurface sand filter has been expanded in size to allow for the detention of runoff from the Congress building and the Parking Garage. The system outlets have been designed to maximize the detention of runoff generated from a 1" rainfall to reduce the peak rate of runoff during this storm and to extend the duration of that runoff as long as practicable to mitigate and reduce the site's contribution to offsite CSO events. The results during this event are summarized in Table 2 below.

The modeling node used to evaluate the connection point to the City system is node SMH-1 representing ESMH-13952.

Table 2 CSO Event Summary Table			
Study Point	1"- 24 Hour Type III Storm		
	Peak Runoff		
	Pre (cfs)	Post (cfs)	Diff. (cfs)
ESMH-13952	1.61	0.28	-1.33 (83%)

The results of the analysis indicates that the proposed system reduces the rate of runoff at the connection to the City's combined sewer by approximately 83%.

To further evaluate the attenuation of flow from the project site during smaller storm events, Table 3 below summarized the performance of the proposed subsurface sand filter detention system identified as Node 1P+G(R-Tank System with Garage) in the model. The table below evaluates the inflow

hydrograph into the system and the outflow hydrograph to the City system during a 1" storm event. This summary most closely represents the contribution of the project site runoff, without the influence of offsite runoff.

The proposed design will reduce the peak rate of runoff from a 1" storm event by 97% compared to the un detained discharge

Table 3 CSO Event Summary Table

Study Point	1"- 24 Hour Type III Storm		
	Peak Runoff		
	Pre (cfs)	Post (cfs)	Diff. (cfs)
R-Tank System	1.48	0.04	-1.44 (97%)

Conclusion

Erosion and sedimentation controls, inspection and maintenance procedures and general housekeeping requirements have been outlined to prevent unreasonable impacts on the site and to the surrounding environment.

By utilizing Best Management practices, stormwater quality treatment has been provided for at least 50% of the total impervious area and at least 50% of the total developed area. Based on the modeling data, the post-development peak rates of runoff for the 2-year, 10-year, and 25-year storm events demonstrate decreases in the peak rates of runoff when compared to the pre-development peak rates of runoff.

The proposed detention and treatment system meets all of the applicable sizing criteria for minimum surface area, channel protection volume, sediment pretreatment volume to address the requirements for the Congress Street Building project. At the City's request, the system has been expanded to accept runoff from the adjacent Visitor Garage for the purpose of detaining runoff from the existing development during a CSO event storm.

With the addition of this area, the system continues to meet the applicable sizing criteria with the exception of the minimum surface area criteria. The proposed system provides approximately 120% of the required area for the Congress Street Building alone. The proposed system provides 80% of the required area for the combined Congress Building and parking garage footprint. Meeting the full area requirement would require an additional 800 sf of system area which is not available on this site.

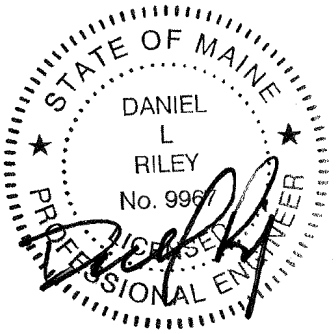
With the incorporation of the above referenced erosion control, treatment and detention measures, the project has been designed in conformance with the Maine Department of Environmental Protection Chapter 500 Stormwater Law and City of Portland Stormwater Management Standards.

Accordingly, it is anticipated that stormwater runoff from the proposed development will not cause a significant adverse effect to off-site receiving channels or downstream properties.

Prepared by,

SEBAGO TECHNICS, INC.





Daniel L. Riley, P.E.
Vice President, Engineering

10/30/2018

October 30, 2018

Attachment A

STORWATER QUALITY CALCULATIONS

Table 4: MDEP REDEVELOPMENT STANDARD CALCULATIONS: MMC Congress Street Building, Portland, Maine

Existing Areas by Pollutant Ranking (S.F.)							Proposed Areas by Pollutant Ranking (S.F.)						
0	1	2	3	4	5	SUM	0	1	2	3	4	5	SUM
0	6,538	17,424	1,739	43,699	0	69,400	0	328	22,153	46,919	0	0	69,400

Existing Areas by Pollutant Ranking (acres)							Proposed Areas by Pollutant Ranking (acres)						
0	1	2	3	4	5	SUM	0	1	2	3	4	5	SUM
0.000	0.150	0.400	0.040	1.003	0.000	1.593	0.000	0.008	0.509	1.077	0.000	0.000	1.593

Existing Weighted Average (Item C)	Proposed Weighted Average (Item D)
5.083	**4.256**

Total Development Area (acres)	Total Redevelopment Area (acres)
1.593	**1.593**

Ranked Impact Change Due to Redevelopment (Item E)
-0.5

Percent Increase in Developed Area
0.00%

Treatment Levels for Redevelopment Projects

Ranked Impact Change Due to Redevelopment (Item E)	Percentage of Developed Area that Must be Treated
0.0 or less	**0% (Stormwater projects)** **50% (Site projects)**
≤ 0.0 to ≥ 1.0	**60%**
> 1.0 to ≥ 2.0	**70%**
> 2.0 to ≥ 3.0	**80%**
> 3.0	**Same treatment level as for new development**

Table 3: MDEP GENERAL STANDARD CALCULATIONS: MMC Congress Street Building, Portland, Maine

AREA ID	WATERSHED SIZE (S.F.)	EXISTING IMPERVIOUS AREA (To Remain) (S.F.)	NEW IMPERVIOUS AREA (S.F.)	EXISTING LANDSCAPED AREA (To Remain) (S.F.)	NEW LANDSCAPED AREA (S.F.)	NEW DEVELOPED AREA (S.F.)	UNDEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	NEW IMPERVIOUS AREA TREATED* (S.F.)	NEW LANDSCAPED AREA TREATED* (S.F.)	NEW DEVELOPED AREA TREATED* (S.F.)	TREATMENT BMP
3.1	10,051	8,335	0	1,716	0	0	0	NO	0	0	0	NONE
3.2	4,089	4,089	0	0	0	0	0	NO	0	0	0	NONE
14.1	22,477	14,929	5,018	0	2,530	7,548	0	NO	0	0	0	NONE
15.1	18,644	10,163	443	8,038	0	443	0	NO	0	0	0	NONE
17.1A	43,616	0	43,616	0	0	43,616	0	YES	43,616	0	43,616	SSSF
17.1B	14,879	0	2,836	0	12,043	14,879	0	YES	2,836	12,043	14,879	Green Roof
18	26,386	26,386	0	0	0	0	0	YES	26,386	0	26,386	SSSF
SUM	**140,142**	**63,902**	**51,913**	**9,754**	**14,573**	**66,486**	**0**	-	**72,838**	**12,043**	**84,881**	-

Designations: SSSF=Subsurface Sand Filter

TOTAL NEW IMPERVIOUS AREA (S.F.)	**51,913**	**TOTAL NEW DEVELOPED AREA (S.F.)**	**66,486**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (S.F.)	**72,838**	**TOTAL DEV. AREA RECEIVING TREATMENT (S.F.)**	**84,881**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**140.3%**	**% OF DEV. AREA RECEIVING TREATMENT**	**127.7%**

SEBAGO TECHNICS, INC.
75 John Roberts Road Suite 4A
South Portland, Maine 04106
Tel. (207) 200-2100

JOB	15466 - Congress Street Building		
SHEET NO.	1	OF	3
CALCULATED BY	DLR	DATE	10/25/2018
FILE NAME	15466 - Stormwater calcs Congre:	PRNT DATE	10/30/2018

UNDERDRAINED SUBSURFACE SAND FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

References 1. Maine DEP Chapter 500, Section 4.B.(2)(b)

a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"

Proposed Congress Building

Tributary to Subsurface Sand Filter #1

Landscaped Area	12,043	SF							
Impervious Area	46,452	SF							

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5% X Impervious)

Total Landscaped Area	12,043	SF	Area	240.9	SF			
Total Impervious Area	46,452	SF	Area	2,322.6	SF			
Required Minimum Surface Area				2,563.5	SF			
Provided Surface Area				3,134.0	SF			

Channel Protection Volume (CPV)

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	12,043	SF	Volume	401.4				
Impervious Area	46,452	SF	Volume	3,871.0				
CPV Required				4,272.4	CF	0.098	AF	
Provided CPV				5,949.0	CF	@ Elev 51.2		

Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:	3.32	cfs		
Iso Row sizing for: 902HD	**0.2**	cfs		
Total number of Isolator Row Chambers required:	17		25	Provided

SEBAGO TECHNICS, INC.
75 John Roberts Road Suite 4A
South Portland, Maine 04106
Tel. (207) 200-2100

JOB	15466 - Congress Street Building		
SHEET NO.	2	OF	3
CALCULATED BY	DLR	DATE	10/25/2018
FILE NAME	15466 - Stormwater calcs Congre	PRNT DATE	10/30/2018

UNDERDRAINED SUBSURFACE SAND FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

References 1. Maine DEP Chapter 500, Section 4.B.(2)(b)

a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"

Existing Visitor Garage

Tributary to Subsurface Sand Filter #1

Landscaped Area	0	SF					
Impervious Area	26,386	SF					

Minimum Surface Area for sand filter and chamber system

Required	(2% X Landscaped + 5% X Impervious)					
Total Landscaped Area	0	SF	Area	0.0	SF	
Total Impervious Area	26,386	SF	Area	1,319.3	SF	
Required Minimum Surface Area				1,319.3	SF	
Provided Surface Area				*	SF	

Channel Protection Volume (CPV)

Required	(0.4" X Landscaped + 1.0" X Impervious)							
Landscaped Area	0	SF	Volume	0.0				
Impervious Area	26,386	SF	Volume	2,198.8				
CPV Required				2,198.8	CF	0.050	AF	
Provided CPV				*	CF			

Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:	1.53	cfs	
Iso Row sizing for:	902HD	**0.2**	cfs
Total number of Isolator Row Chambers required:	8		

SEBAGO TECHNICS, INC.
75 John Roberts Road Suite 4A
South Portland, Maine 04106
Tel. (207) 200-2100

JOB	15466 - Congress Street Building		
SHEET NO.	3	OF	3
CALCULATED BY	DLR	DATE	10/25/2018
FILE NAME	15466 - Stormwater calcs Congre:	PRNT DATE	10/30/2018

UNDERDRAINED SUBSURFACE SAND FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

References 1. Maine DEP Chapter 500, Section 4.B.(2)(b)

a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"

Congress Building and Visitor Garage

Tributary to Subsurface Sand Filter #1

Landscaped Area	12,073	SF				
Impervious Area	72,838	SF				

Minimum Surface Area for sand filter and chamber system

Required (2% X Landscaped + 5% X Impervious)

Total Landscaped Area	12,073	SF	Area	241	SF	
Total Impervious Area	72,838	SF	Area	3,642	SF	
Required Minimum Surface Area				3,883	SF	
Provided Surface Area				3,134	SF	

Channel Protection Volume (CPV)

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	12,073	SF	Volume	402				
Impervious Area (Bldg)	43,558	SF	Volume	3,630				
Site Pavement	2,894							
Impervious Area (Garage)	26,386			2,199				
				0		(ASSUMES 25% Pretreament Credit for HIL Unit)		
CPV Required				5,829	CF	0.134	AF	
Provided CPV				5,949	CF	@ Elev 51.2		

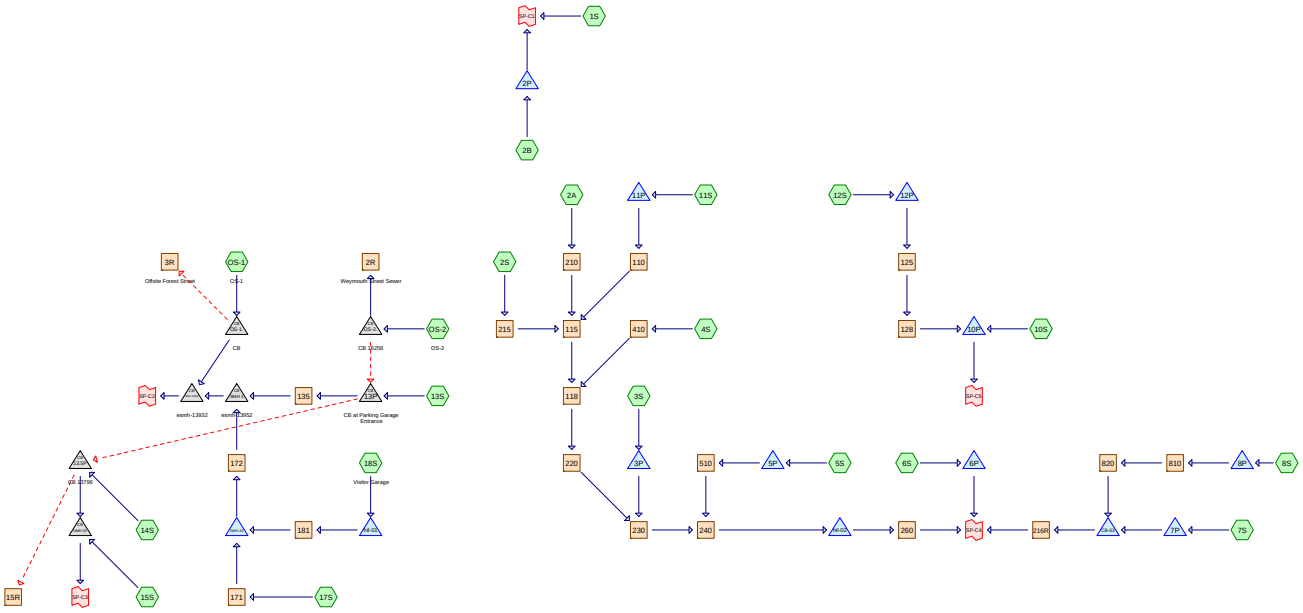
Sediment Pre-Treatment

Per Reference 2.c above

One year flow rate out put from Hydrocad:	4.50	cfs	
Iso Row sizing for: 902HD	**0.2**	cfs	
Total number of Isolator Row Chambers required:	23	25	

Attachment B

HYDROCAD OUTPUT



Subcat Reach Pond Link

Routing Diagram for 15466 - Congress CD PRE

Prepared by Sebago Technics, Inc., Printed 9/24/2018

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.354	39	>75% Grass cover, Good, HSG A (1S, 2B, 3S, 5S, 6S, 8S, 10S, 14S, 15S)
7.080	98	Paved parking (1S, 2A, 2B, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 10S, 11S, 12S, 13S, 14S, 15S, 17S)
2.834	98	Roofs (5S, 6S, 8S, 10S, 18S)
1.998	89	Urban commercial, 85% imp, HSG A (13S, OS-1, OS-2)
1.517	43	Woods/grass comb., Fair, HSG A (7S, 8S, 13S)
15.783	**83**	**TOTAL AREA**

Summary for Subcatchment 1S:

Runoff = 0.03 cfs @ 12.16 hrs, Volume= 0.004 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	14,272	98	Paved parking
	5,174	39	>75% Grass cover, Good, HSG A
	19,446	82	Weighted Average
	5,174		26.61% Pervious Area
	14,272		73.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.0500	0.20		**Sheet Flow, SHEET A TO B** Grass: Short n= 0.150 P2= 3.00"
0.2	33	0.0500	3.35		**Shallow Concentrated Flow, SHALLOW B TO C** Grassed Waterway Kv= 15.0 fps
0.3	82	0.0420	4.16		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
0.1	74	0.0500	10.99	8.63	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
2.0					**Direct Entry, DIRECT**
6.0	229	Total			

Summary for Subcatchment 2A:

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.038 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	25,217	98	Paved parking
	25,217		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.60		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
1.3	112	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
3.9					**Direct Entry, DIRECT**
6.0	142	Total			

Summary for Subcatchment 2B:

Runoff = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	10,133	98	Paved parking
	3,735	39	>75% Grass cover, Good, HSG A
	13,868	82	Weighted Average
	3,735		26.93% Pervious Area
	10,133		73.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	30	0.0100	0.79		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.5	123	0.0380	3.96		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
2.0	131	0.0005	1.10	0.86	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
2.9					**Direct Entry, DIRECT**
6.0	284	Total			

Summary for Subcatchment 2S:

Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	16,157	98	Paved parking
	16,157		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0180	1.00		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	78	0.0370	3.90		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	136	0.0107	5.08	3.99	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
4.8					**Direct Entry, DIRECT**
6.0	244	Total			

Summary for Subcatchment 3S:

Runoff = 0.06 cfs @ 12.11 hrs, Volume= 0.006 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	3,076	39	>75% Grass cover, Good, HSG A
*	11,898	98	Paved parking
	14,974	86	Weighted Average
	3,076		20.54% Pervious Area
	11,898		79.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0250	1.14		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	106	0.0810	5.78		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.2	222	0.0530	14.83	26.20	**Pipe Channel, PIPE C TO D** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
5.1					**Direct Entry, DIRECT**
6.0	358	Total			

Summary for Subcatchment 4S:

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	23,249	98	Paved parking
	23,249		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
1.3	110	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
3.4					**Direct Entry, DIRECT**
6.0	160	Total			

Summary for Subcatchment 5S:

Runoff = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	25,085	98	Paved parking
	26,415	39	>75% Grass cover, Good, HSG A
*	73,528	98	Roofs
	125,028	86	Weighted Average
	26,415		21.13% Pervious Area
	98,613		78.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	35	0.0050	0.62		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
2.2	355	0.0050	2.65	0.93	**Pipe Channel, PIPE B TO C** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.1	35	0.0300	8.51	6.69	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.2	85	0.0160	6.22	4.88	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
2.6					**Direct Entry, DIRECT**
6.0	510	Total			

Summary for Subcatchment 6S:

Runoff = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	2,282	39	>75% Grass cover, Good, HSG A
*	501	98	Paved parking
*	8,302	98	Roofs
	11,085	86	Weighted Average
	2,282		20.59% Pervious Area
	8,803		79.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	30	0.0100	0.79		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	64	0.0100	3.75	1.31	**Pipe Channel, PIPE B TO C (ROOF DRAIN)** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.0	27	0.0740	10.20	3.56	**Pipe Channel, PIPE C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
5.1					**Direct Entry, DIRECT**
6.0	121	Total			

Summary for Subcatchment 7S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	56,212	43	Woods/grass comb., Fair, HSG A
*	36,084	98	Paved parking
	92,296	65	Weighted Average
	56,212		60.90% Pervious Area
	36,084		39.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	75	0.0400	1.66		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.5	78	0.0180	2.72		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.7	219	0.0590	4.93		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
0.2	72	0.0970	6.32		**Shallow Concentrated Flow, SHALLOW D TO E** Paved Kv= 20.3 fps
0.2	190	0.1020	15.70	12.33	**Pipe Channel, PIPE E TO F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
3.6					**Direct Entry, DIRECT**
6.0	634	Total			

Summary for Subcatchment 8S:

Runoff = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	16,895	98	Paved parking
	7,542	43	Woods/grass comb., Fair, HSG A
	8,958	39	>75% Grass cover, Good, HSG A
*	12,138	98	Roofs
	45,533	77	Weighted Average
	16,500		36.24% Pervious Area
	29,033		63.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	40	0.0050	0.64		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	93	0.0100	4.91	3.86	**Pipe Channel, PIPE B TO C** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.5	135	0.0100	4.91	3.86	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.4	131	0.0100	4.91	3.86	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
3.8					**Direct Entry, DIRECT**
6.0	399	Total			

Summary for Subcatchment 10S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	25,937	39	>75% Grass cover, Good, HSG A
*	9,276	98	Paved parking
*	2,034	98	Roofs
	37,247	57	Weighted Average
	25,937		69.64% Pervious Area
	11,310		30.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0400	1.38		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.1	37	0.0540	4.72		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	75	0.0200	2.87		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
0.3	113	0.0210	7.12	5.59	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.3	71	0.0050	3.47	2.73	**Pipe Channel, PIPE E TO F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
4.5					**Direct Entry, DIRECT**
6.0	326	Total			

Summary for Subcatchment 11S:

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	11,050	98	Paved parking
	11,050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.60		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.7	60	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
4.5					**Direct Entry, DIRECT**
6.0	90	Total			

Summary for Subcatchment 12S:

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	23,268	98	Paved parking
	23,268		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.60		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.9	80	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	90	0.0100	3.75	1.31	**Pipe Channel, PIPE C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
3.9					**Direct Entry, DIRECT**
6.0	200	Total			

Summary for Subcatchment 13S:

Runoff = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	14,571	98	Paved parking
	2,309	43	Woods/grass comb., Fair, HSG A
	19,134	89	Urban commercial, 85% imp, HSG A
	36,014	90	Weighted Average
	5,179		14.38% Pervious Area
	30,835		85.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		**Sheet Flow, SHEET A TO B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.2	51	0.6400	4.00		**Shallow Concentrated Flow, SHALLOW B TO C** Woodland Kv= 5.0 fps
0.4	105	0.0420	4.16		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
6.2	196	Total			

Summary for Subcatchment 14S:

Runoff = 0.00 cfs @ 23.95 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	14,684	98	Paved parking
	15,059	39	>75% Grass cover, Good, HSG A
	29,743	68	Weighted Average
	15,059		50.63% Pervious Area
	14,684		49.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	45	0.0680	0.23		**Sheet Flow, SHEET A TO B** Grass: Short n= 0.150 P2= 3.00"
1.0	217	0.0320	3.63		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
1.7					**Direct Entry, DIRECT**
6.0	262	Total			

Summary for Subcatchment 15S:

Runoff = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	11,909	39	>75% Grass cover, Good, HSG A
*	15,681	98	Paved parking
	27,590	73	Weighted Average
	11,909		43.16% Pervious Area
	15,681		56.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	18	0.2770	0.33		**Sheet Flow, SHEET A TO B** Grass: Short n= 0.150 P2= 3.00"
0.5	190	0.1920	6.57		**Shallow Concentrated Flow, SHALLOW B TO C** Grassed Waterway Kv= 15.0 fps
0.5	176	0.0760	5.60		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
4.1					**Direct Entry, DIRECT**
6.0	384	Total			

Summary for Subcatchment 17S:

Runoff = 0.81 cfs @ 12.09 hrs, Volume= 0.061 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	40,392	98	Paved parking
	40,392		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	40	0.0100	0.84		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.1	14	0.0100	2.03		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.1	134	0.1600	15.00	5.24	**Pipe Channel, PIPE C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
5.0					**Direct Entry, DIRECT**
6.0	188	Total			

Summary for Subcatchment 18S: Visitor Garage

Runoff = 0.55 cfs @ 12.09 hrs, Volume= 0.042 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	27,443	98	Roofs
	27,443		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	40	0.0100	0.84		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	141	0.2000	9.08		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	135	0.0110	5.15	4.05	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
4.5					**Direct Entry, DIRECT**
6.0	316	Total			

Summary for Subcatchment OS-1: OS-1

Runoff = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

Area (sf)	CN	Description
17,031	89	Urban commercial, 85% imp, HSG A
2,555		15.00% Pervious Area
14,476		85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	60	0.0400	0.20		**Sheet Flow, Sheet flow A-B** Grass: Short n= 0.150 P2= 3.00"
0.9	180	0.0250	3.21		**Shallow Concentrated Flow, Gutter Flow B-C (Russell Street)** Paved Kv= 20.3 fps
0.7	80	0.0100	2.03		**Shallow Concentrated Flow, Gutter Flow C-D (Hill Street)** Paved Kv= 20.3 fps
1.1	375	0.0800	5.74		**Shallow Concentrated Flow, Gutter Flow D-E (Ellsworth Street)** Paved Kv= 20.3 fps
2.2	605	0.0500	4.54		**Shallow Concentrated Flow, Gutter Flow E-F (Congress Street)** Paved Kv= 20.3 fps
10.0	1,300	Total			

Summary for Subcatchment OS-2: OS-2

Runoff = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

Area (sf)	CN	Description
50,885	89	Urban commercial, 85% imp, HSG A
7,633		15.00% Pervious Area
43,252		85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	60	0.0400	0.20		**Sheet Flow, Sheet flow A-B** Grass: Short n= 0.150 P2= 3.00"
0.9	180	0.0250	3.21		**Shallow Concentrated Flow, Gutter Flow B-C (Russell Street)** Paved Kv= 20.3 fps
0.7	80	0.0100	2.03		**Shallow Concentrated Flow, Gutter Flow C-D (Hill Street)** Paved Kv= 20.3 fps
1.1	375	0.0800	5.74		**Shallow Concentrated Flow, Gutter Flow D-E (Ellsworth Street)** Paved Kv= 20.3 fps
2.2	605	0.0500	4.54		**Shallow Concentrated Flow, Gutter Flow E-F (Congress Street)** Paved Kv= 20.3 fps
10.0	1,300	Total			

Summary for Reach 2R: Weymouth Street Sewer

Inflow Area = 1.168 ac, 85.00% Impervious, Inflow Depth = 0.28" for 1-Inch event
Inflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af
Outflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Offsite Forest Street

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 15R:

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

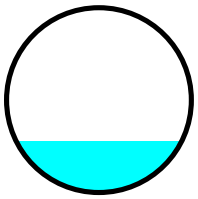
Summary for Reach 110:

Inflow Area = 0.254 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af
Outflow = 0.22 cfs @ 12.10 hrs, Volume= 0.017 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.79 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 0.9 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.31 cfs

8.0" Round Pipe
n= 0.012
Length= 51.0' Slope= 0.0100 '/'
Inlet Invert= 110.51', Outlet Invert= 110.00'



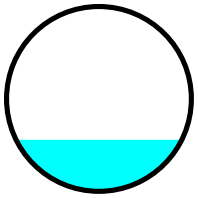
Summary for Reach 115:

Inflow Area = 1.203 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 1.04 cfs @ 12.10 hrs, Volume= 0.079 af
Outflow = 1.02 cfs @ 12.10 hrs, Volume= 0.079 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.73 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 0.9 min

Peak Storage= 19 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.17 cfs

15.0" Round Pipe
n= 0.012
Length= 67.0' Slope= 0.0078 '/'
Inlet Invert= 110.11', Outlet Invert= 109.59'



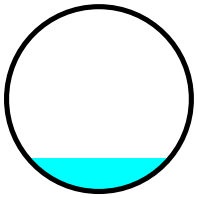
Summary for Reach 118:

Inflow Area = 1.737 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 1.48 cfs @ 12.10 hrs, Volume= 0.114 af
Outflow = 1.47 cfs @ 12.11 hrs, Volume= 0.114 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.86 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.26 fps, Avg. Travel Time= 0.7 min

Peak Storage= 19 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 20.98 cfs

18.0" Round Pipe
n= 0.012
Length= 90.0' Slope= 0.0340 '/'
Inlet Invert= 109.44', Outlet Invert= 106.38'



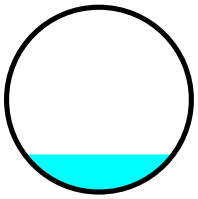
Summary for Reach 125:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.46 cfs @ 12.10 hrs, Volume= 0.035 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.10 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 1.0 min

Peak Storage= 9 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.21 cfs

12.0" Round Pipe
n= 0.012
Length= 79.0' Slope= 0.0182 '/'
Inlet Invert= 131.87', Outlet Invert= 130.43'



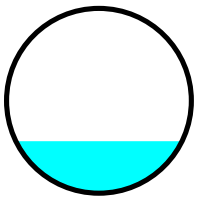
Summary for Reach 128:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.10 hrs, Volume= 0.035 af
Outflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.54 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 1.4 min

Peak Storage= 13 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.67 cfs

12.0" Round Pipe
n= 0.012
Length= 71.0' Slope= 0.0048 '/'
Inlet Invert= 130.40', Outlet Invert= 130.06'



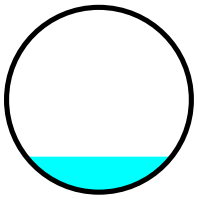
Summary for Reach 135:

Inflow Area = 0.827 ac, 85.62% Impervious, Inflow Depth = 0.32" for 1-Inch event
Inflow = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af
Outflow = 0.28 cfs @ 12.12 hrs, Volume= 0.022 af, Atten= 3%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.13 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.40 fps, Avg. Travel Time= 1.6 min

Peak Storage= 11 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 3.58 cfs

8.0" Round Pipe
n= 0.012
Length= 225.0' Slope= 0.0747 '/'
Inlet Invert= 62.69', Outlet Invert= 45.89'



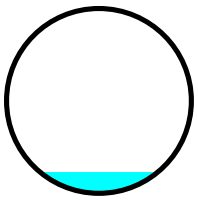
Summary for Reach 171:

Inflow Area = 0.927 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 0.061 af
Outflow = 0.81 cfs @ 12.09 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.40 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.51 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 29.32 cfs

15.0" Round Pipe
n= 0.012
Length= 31.0' Slope= 0.1755 '/'
Inlet Invert= 57.44', Outlet Invert= 52.00'



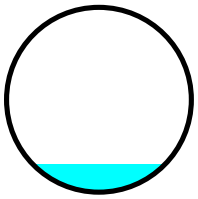
Summary for Reach 172:

Inflow Area = 1.557 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 1.35 cfs @ 12.09 hrs, Volume= 0.103 af
Outflow = 1.34 cfs @ 12.09 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.53 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.82 fps, Avg. Travel Time= 0.2 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 27.27 cfs

15.0" Round Pipe
n= 0.012
Length= 38.0' Slope= 0.1518 '/'
Inlet Invert= 51.66', Outlet Invert= 45.89'



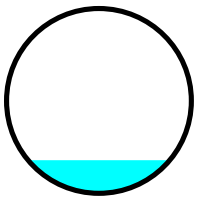
Summary for Reach 181:

Inflow Area = 0.630 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 0.042 af
Outflow = 0.54 cfs @ 12.10 hrs, Volume= 0.042 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.81 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.91 fps, Avg. Travel Time= 0.9 min

Peak Storage= 10 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.96 cfs

12.0" Round Pipe
n= 0.012
Length= 104.0' Slope= 0.0425 '/'
Inlet Invert= 56.28', Outlet Invert= 51.86'



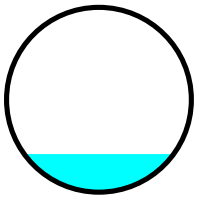
Summary for Reach 210:

Inflow Area = 0.579 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.50 cfs @ 12.10 hrs, Volume= 0.038 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.34 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 0.8 min

Peak Storage= 8 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.46 cfs

12.0" Round Pipe
n= 0.012
Length= 66.0' Slope= 0.0200 '/'
Inlet Invert= 122.35', Outlet Invert= 121.03'



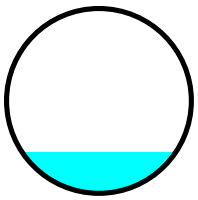
Summary for Reach 215:

Inflow Area = 0.371 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af
Outflow = 0.32 cfs @ 12.10 hrs, Volume= 0.024 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.47 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 1.1 min

Peak Storage= 7 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.96 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 52.0' Slope= 0.0069 '/'
Inlet Invert= 121.67', Outlet Invert= 121.31'



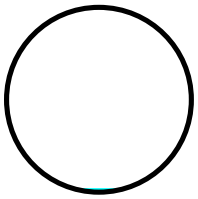
Summary for Reach 216R:

Inflow Area = 3.164 ac, 47.24% Impervious, Inflow Depth = 0.02" for 1-Inch event
Inflow = 0.01 cfs @ 12.52 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.52 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.12 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.27 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 12.52 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 16.96 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 12.0' Slope= 0.2267 '/'
Inlet Invert= 60.11', Outlet Invert= 57.39'



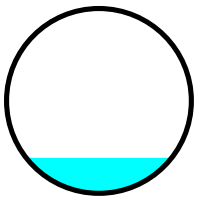
Summary for Reach 220:

Inflow Area = 1.737 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 1.47 cfs @ 12.11 hrs, Volume= 0.114 af
Outflow = 1.42 cfs @ 12.12 hrs, Volume= 0.114 af, Atten= 3%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.18 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.05 fps, Avg. Travel Time= 1.8 min

Peak Storage= 51 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 18.30 cfs

18.0" Round Pipe
n= 0.012
Length= 218.0' Slope= 0.0259 '/'
Inlet Invert= 105.99', Outlet Invert= 100.35'



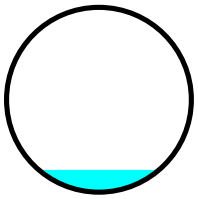
Summary for Reach 230:

Inflow Area = 2.081 ac, 96.61% Impervious, Inflow Depth = 0.69" for 1-Inch event
Inflow = 1.48 cfs @ 12.12 hrs, Volume= 0.120 af
Outflow = 1.47 cfs @ 12.13 hrs, Volume= 0.120 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.41 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.27 fps, Avg. Travel Time= 0.3 min

Peak Storage= 10 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 49.39 cfs

18.0" Round Pipe
n= 0.012
Length= 87.0' Slope= 0.1884 '/'
Inlet Invert= 100.16', Outlet Invert= 83.77'



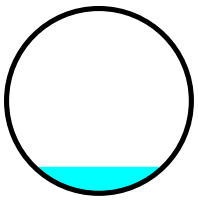
Summary for Reach 240:

Inflow Area = 4.951 ac, 86.33% Impervious, Inflow Depth = 0.41" for 1-Inch event
Inflow = 2.00 cfs @ 12.12 hrs, Volume= 0.167 af
Outflow = 1.97 cfs @ 12.13 hrs, Volume= 0.167 af, Atten= 2%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.83 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.43 fps, Avg. Travel Time= 0.4 min

Peak Storage= 15 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.69 cfs

18.0" Round Pipe
n= 0.012
Length= 100.0' Slope= 0.1612 '/'
Inlet Invert= 67.96', Outlet Invert= 51.84'



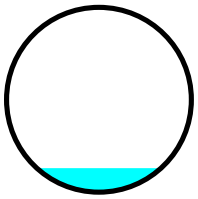
Summary for Reach 260:

Inflow Area = 4.951 ac, 86.33% Impervious, Inflow Depth = 0.41" for 1-Inch event
Inflow = 1.97 cfs @ 12.13 hrs, Volume= 0.167 af
Outflow = 1.96 cfs @ 12.13 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.28 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.87 fps, Avg. Travel Time= 0.3 min

Peak Storage= 11 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 55.59 cfs

24.0" Round Pipe
n= 0.012
Length= 48.0' Slope= 0.0515 '/'
Inlet Invert= 51.84', Outlet Invert= 49.37'



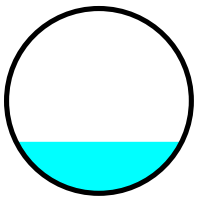
Summary for Reach 410:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.62 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 0.7 min

Peak Storage= 6 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.77 cfs

12.0" Round Pipe
n= 0.012
Length= 35.0' Slope= 0.0051 '/'
Inlet Invert= 110.68', Outlet Invert= 110.50'



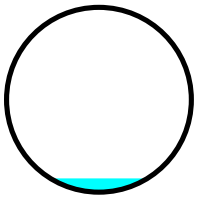
Summary for Reach 510:

Inflow Area = 2.870 ac, 78.87% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af
Outflow = 0.52 cfs @ 12.11 hrs, Volume= 0.047 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.95 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.94 fps, Avg. Travel Time= 0.3 min

Peak Storage= 4 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 47.85 cfs

18.0" Round Pipe
n= 0.012
Length= 62.0' Slope= 0.1768 '/'
Inlet Invert= 95.90', Outlet Invert= 84.94'



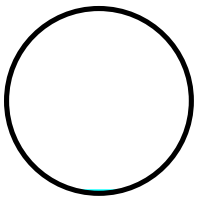
Summary for Reach 810:

Inflow Area = 1.045 ac, 63.76% Impervious, Inflow Depth = 0.05" for 1-Inch event
Inflow = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.47 hrs, Volume= 0.004 af, Atten= 1%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.26 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.35 fps, Avg. Travel Time= 1.5 min

Peak Storage= 1 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 17.81 cfs

12.0" Round Pipe
n= 0.012
Length= 210.0' Slope= 0.2129 '/'
Inlet Invert= 120.21', Outlet Invert= 75.50'



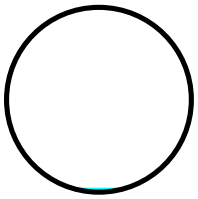
Summary for Reach 820:

Inflow Area = 1.045 ac, 63.76% Impervious, Inflow Depth = 0.05" for 1-Inch event
Inflow = 0.01 cfs @ 12.47 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.50 hrs, Volume= 0.004 af, Atten= 2%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.55 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.82 fps, Avg. Travel Time= 1.5 min

Peak Storage= 1 cf @ 12.48 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 12.32 cfs

12.0" Round Pipe
n= 0.012
Length= 164.0' Slope= 0.1020 '/'
Inlet Invert= 75.58', Outlet Invert= 58.86'



Summary for Pond 2P:

Inflow Area = 0.318 ac, 73.07% Impervious, Inflow Depth = 0.11" for 1-Inch event
Inflow = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af
Outflow = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.2 min
Primary = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 107.03' @ 12.16 hrs Surf.Area= 13 sf Storage= 0 cf

Plug-Flow detention time= 0.3 min calculated for 0.003 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (928.3 - 928.0)

Volume	Invert	Avail.Storage	Storage Description
#1	107.00'	169 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
107.00	13	0	0
120.00	13	169	169

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 107.00' / 106.50' S= 0.0100 '/' Cc= 0.900
n= 0.011, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.16 hrs HW=107.03' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.00 cfs @ 0.81 fps)

Summary for Pond 3P:

Inflow Area = 0.344 ac, 79.46% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.06 cfs @ 12.11 hrs, Volume= 0.006 af
Primary = 0.06 cfs @ 12.11 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 5P:

Inflow Area = 2.870 ac, 78.87% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af
Primary = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 6P:

Inflow Area = 0.254 ac, 79.41% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af
Primary = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 7P:

Inflow Area = 2.119 ac, 39.10% Impervious, Inflow Depth = 0.00" for 1-Inch event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 8P:

Inflow Area = 1.045 ac, 63.76% Impervious, Inflow Depth = 0.05" for 1-Inch event
Inflow = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af
Primary = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 10P:

Inflow Area = 1.389 ac, 57.14% Impervious, Inflow Depth = 0.30" for 1-Inch event
Inflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af
Primary = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 11P:

Inflow Area = 0.254 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af
Primary = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 12P:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Primary = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 13.5P: CB 13796

Inflow Area = 0.683 ac, 49.37% Impervious, Inflow Depth = 0.00" for 1-Inch event
Inflow = 0.00 cfs @ 23.95 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 23.95 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 23.95 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 42.50' @ 23.95 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	38.86'	**10.0" Round 12" SD** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 38.86' / 37.64' S= 0.0813 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	42.50'	**2.0' long Curb Inlet** 2 End Contraction(s)
#3	Secondary	43.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 23.95 hrs HW=42.50' (Free Discharge)
└**1=12" SD** (Passes 0.00 cfs of 4.72 cfs potential flow)
└**2=Curb Inlet** (Weir Controls 0.00 cfs @ 0.06 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=38.86' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 13P: CB at Parking Garage Entrance

Inflow Area = 0.827 ac, 85.62% Impervious, Inflow Depth = 0.32" for 1-Inch event
Inflow = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af
Outflow = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min
Primary = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 66.03' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	66.00'	**1.0" x 3.0" Horiz. Grate X 24.00** C= 0.600 Limited to weir flow at low heads
#2	Secondary	66.20'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.28 cfs @ 12.10 hrs HW=66.03' (Free Discharge)
└**1=Grate** (Weir Controls 0.28 cfs @ 0.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond CB-63:

Inflow Area = 3.164 ac, 47.24% Impervious, Inflow Depth = 0.02" for 1-Inch event
Inflow = 0.01 cfs @ 12.50 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.52 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.8 min
Primary = 0.01 cfs @ 12.52 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 59.84' @ 12.52 hrs Surf.Area= 13 sf Storage= 1 cf

Plug-Flow detention time= 0.8 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,000.9 - 1,000.1)

Volume	Invert	Avail.Storage	Storage Description
#1	59.80'	81 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.80	13	0	0
66.00	13	81	81

Device	Routing	Invert	Outlet Devices
#1	Primary	59.80'	**12.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 59.80' / 58.46' S= 0.1340 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.01 cfs @ 12.52 hrs HW=59.84' (Free Discharge)
1=Culvert (Inlet Controls 0.01 cfs @ 0.71 fps)

Summary for Pond DMH 20:

Inflow Area = 1.316 ac, 52.96% Impervious, Inflow Depth = 0.01" for 1-Inch event
Inflow = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 37.61' @ 15.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.59'	**12.0" Round 12" SD** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.59' / 35.00' S= 0.1295 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 15.12 hrs HW=37.61' (Free Discharge)
1=12" SD (Inlet Controls 0.00 cfs @ 0.45 fps)

Summary for Pond hil-01:

Inflow Area = 0.630 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 0.042 af
Primary = 0.55 cfs @ 12.09 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond hil-02:

Inflow Area = 4.951 ac, 86.33% Impervious, Inflow Depth = 0.41" for 1-Inch event
Inflow = 1.97 cfs @ 12.13 hrs, Volume= 0.167 af
Primary = 1.97 cfs @ 12.13 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond OS-1.: CB

Inflow Area = 0.391 ac, 85.00% Impervious, Inflow Depth = 0.28" for 1-Inch event
Inflow = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af
Outflow = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 55.05' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	45.00'	**8.0" Round Stormdrain** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.44' S= 0.0373 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	55.00'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Secondary	55.20'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.07 cfs @ 12.16 hrs HW=55.05' (Free Discharge)
↑└**1=Stormdrain** (Passes 0.07 cfs of 5.24 cfs potential flow)
↑└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.07 cfs @ 0.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=45.00' (Free Discharge)
↑└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond OS-2.: CB 16258

Inflow Area = 1.168 ac, 85.00% Impervious, Inflow Depth = 0.28" for 1-Inch event
Inflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af
Outflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 83.13' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	79.02'	**8.0" Round Stormdrain** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.02' / 78.25' S= 0.0220 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	83.00'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Secondary	83.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.30 cfs @ 12.16 hrs HW=83.13' (Free Discharge)
└**1=Stormdrain** (Passes 0.30 cfs of 3.12 cfs potential flow)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.30 cfs @ 1.18 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=79.02' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond SMH 1: esmh-13952

Inflow Area = 2.384 ac, 95.01% Impervious, Inflow Depth = 0.63" for 1-Inch event
Inflow = 1.61 cfs @ 12.10 hrs, Volume= 0.125 af
Outflow = 1.61 cfs @ 12.10 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min
Primary = 1.61 cfs @ 12.10 hrs, Volume= 0.125 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 45.19' @ 12.10 hrs
Flood Elev= 52.64'

Device	Routing	Invert	Outlet Devices
#1	Primary	44.61'	**18.0" Round Sewer** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.61' / 41.64' S= 0.0660 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=1.60 cfs @ 12.10 hrs HW=45.18' (Free Discharge)
└**1=Sewer** (Inlet Controls 1.60 cfs @ 2.58 fps)

Summary for Pond SMH-13932: esmh-13932

Inflow Area = 2.775 ac, 93.60% Impervious, Inflow Depth = 0.58" for 1-Inch event
Inflow = 1.70 cfs @ 12.10 hrs, Volume= 0.134 af
Outflow = 1.70 cfs @ 12.10 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min
Primary = 1.70 cfs @ 12.10 hrs, Volume= 0.134 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 41.23' @ 12.10 hrs
Flood Elev= 52.64'

Device	Routing	Invert	Outlet Devices
#1	Primary	40.64'	**18.0" Round Sewer** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 40.64' / 38.00' S= 0.0587 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=1.70 cfs @ 12.10 hrs HW=41.23' (Free Discharge)
└**1=Sewer** (Inlet Controls 1.70 cfs @ 2.62 fps)

Summary for Pond SMH-20:

Inflow Area = 1.557 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 1.35 cfs @ 12.09 hrs, Volume= 0.103 af
Primary = 1.35 cfs @ 12.09 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C1:

Inflow Area = 0.765 ac, 73.26% Impervious, Inflow Depth = 0.11" for 1-Inch event
Inflow = 0.05 cfs @ 12.16 hrs, Volume= 0.007 af
Primary = 0.05 cfs @ 12.16 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C2:

Inflow Area = 2.775 ac, 93.60% Impervious, Inflow Depth = 0.58" for 1-Inch event
Inflow = 1.70 cfs @ 12.10 hrs, Volume= 0.134 af
Primary = 1.70 cfs @ 12.10 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C3:

Inflow Area = 1.316 ac, 52.96% Impervious, Inflow Depth = 0.01" for 1-Inch event
Inflow = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af
Primary = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C4:

Inflow Area = 8.370 ac, 71.34% Impervious, Inflow Depth = 0.25" for 1-Inch event
Inflow = 2.00 cfs @ 12.13 hrs, Volume= 0.176 af
Primary = 2.00 cfs @ 12.13 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C5:

Inflow Area = 1.389 ac, 57.14% Impervious, Inflow Depth = 0.30" for 1-Inch event
Inflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af
Primary = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=1.46"
Flow Length=229' Tc=6.0 min CN=82 Runoff=0.75 cfs 0.054 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.70 cfs 0.138 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=1.46"
Flow Length=284' Tc=6.0 min CN=82 Runoff=0.53 cfs 0.039 af

Subcatchment2S: Runoff Area=16,157 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=244' Tc=6.0 min CN=98 Runoff=1.09 cfs 0.089 af

Subcatchment3S: Runoff Area=14,974 sf 79.46% Impervious Runoff Depth=1.75"
Flow Length=358' Tc=6.0 min CN=86 Runoff=0.69 cfs 0.050 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.57 cfs 0.128 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=1.75"
Flow Length=510' Tc=6.0 min CN=86 Runoff=5.77 cfs 0.418 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=1.75"
Flow Length=121' Tc=6.0 min CN=86 Runoff=0.51 cfs 0.037 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=0.55"
Flow Length=634' Tc=6.0 min CN=65 Runoff=1.03 cfs 0.098 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=1.14"
Flow Length=399' Tc=6.0 min CN=77 Runoff=1.33 cfs 0.099 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=0.28"
Flow Length=326' Tc=6.0 min CN=57 Runoff=0.11 cfs 0.020 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=0.74 cfs 0.061 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=200' Tc=6.0 min CN=98 Runoff=1.57 cfs 0.128 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=2.08"
Flow Length=196' Tc=6.2 min CN=90 Runoff=1.94 cfs 0.143 af

Subcatchment14S: Runoff Area=29,743 sf 49.37% Impervious Runoff Depth=0.68"
Flow Length=262' Tc=6.0 min CN=68 Runoff=0.45 cfs 0.039 af

Subcatchment15S: Runoff Area=27,590 sf 56.84% Impervious Runoff Depth=0.92"
Flow Length=384' Tc=6.0 min CN=73 Runoff=0.62 cfs 0.049 af

Subcatchment 17S: Runoff Area=40,392 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=188' Tc=6.0 min CN=98 Runoff=2.72 cfs 0.222 af

Subcatchment 18S: Visitor Garage Runoff Area=27,443 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=316' Tc=6.0 min CN=98 Runoff=1.85 cfs 0.151 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=1.99"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=0.78 cfs 0.065 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=1.99"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=2.34 cfs 0.194 af

Reach 2R: Weymouth Street Sewer Inflow=2.28 cfs 0.194 af
Outflow=2.28 cfs 0.194 af

Reach 3R: Offsite Forest Street Inflow=0.13 cfs 0.001 af
Outflow=0.13 cfs 0.001 af

Reach 15R: Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach 110: Avg. Flow Depth=0.36' Max Vel=3.87 fps Inflow=0.74 cfs 0.061 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=0.74 cfs 0.061 af

Reach 115: Avg. Flow Depth=0.68' Max Vel=5.19 fps Inflow=3.51 cfs 0.288 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=3.48 cfs 0.288 af

Reach 118: Avg. Flow Depth=0.50' Max Vel=9.76 fps Inflow=5.04 cfs 0.415 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=5.01 cfs 0.415 af

Reach 125: Avg. Flow Depth=0.38' Max Vel=5.80 fps Inflow=1.57 cfs 0.128 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=1.56 cfs 0.128 af

Reach 128: Avg. Flow Depth=0.55' Max Vel=3.53 fps Inflow=1.56 cfs 0.128 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=1.54 cfs 0.128 af

Reach 135: Avg. Flow Depth=0.28' Max Vel=9.40 fps Inflow=1.29 cfs 0.136 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=1.28 cfs 0.136 af

Reach 171: Avg. Flow Depth=0.26' Max Vel=14.91 fps Inflow=2.72 cfs 0.222 af
15.0" Round Pipe n=0.012 L=31.0' S=0.1755 '/' Capacity=29.32 cfs Outflow=2.72 cfs 0.222 af

Reach 172: Avg. Flow Depth=0.35' Max Vel=16.46 fps Inflow=4.56 cfs 0.372 af
15.0" Round Pipe n=0.012 L=38.0' S=0.1518 '/' Capacity=27.27 cfs Outflow=4.55 cfs 0.372 af

Reach 181: Avg. Flow Depth=0.33' Max Vel=8.24 fps Inflow=1.85 cfs 0.151 af
12.0" Round Pipe n=0.012 L=104.0' S=0.0425 '/' Capacity=7.96 cfs Outflow=1.84 cfs 0.151 af

Reach 210: Avg. Flow Depth=0.38' Max Vel=6.13 fps Inflow=1.70 cfs 0.138 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=1.69 cfs 0.138 af

Reach 215: Avg. Flow Depth=0.42' Max Vel=3.48 fps Inflow=1.09 cfs 0.089 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=1.08 cfs 0.089 af

Reach 216R: Avg. Flow Depth=0.25' Max Vel=15.09 fps Inflow=2.33 cfs 0.197 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=2.33 cfs 0.197 af

Reach 220: Avg. Flow Depth=0.54' Max Vel=8.82 fps Inflow=5.01 cfs 0.415 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=4.91 cfs 0.415 af

Reach 230: Avg. Flow Depth=0.34' Max Vel=18.51 fps Inflow=5.59 cfs 0.465 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=5.57 cfs 0.465 af

Reach 240: Avg. Flow Depth=0.51' Max Vel=21.42 fps Inflow=11.29 cfs 0.883 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=11.25 cfs 0.883 af

Reach 260: Avg. Flow Depth=0.61' Max Vel=13.86 fps Inflow=11.25 cfs 0.883 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=11.22 cfs 0.883 af

Reach 410: Avg. Flow Depth=0.54' Max Vel=3.63 fps Inflow=1.57 cfs 0.128 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=1.56 cfs 0.128 af

Reach 510: Avg. Flow Depth=0.35' Max Vel=18.27 fps Inflow=5.77 cfs 0.418 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=5.76 cfs 0.418 af

Reach 810: Avg. Flow Depth=0.19' Max Vel=13.33 fps Inflow=1.33 cfs 0.099 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=1.32 cfs 0.099 af

Reach 820: Avg. Flow Depth=0.22' Max Vel=10.22 fps Inflow=1.32 cfs 0.099 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=1.30 cfs 0.099 af

Pond 2P: Peak Elev=107.31' Storage=4 cf Inflow=0.53 cfs 0.039 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=0.53 cfs 0.039 af

Pond 3P: Inflow=0.69 cfs 0.050 af
Primary=0.69 cfs 0.050 af

Pond 5P: Inflow=5.77 cfs 0.418 af
Primary=5.77 cfs 0.418 af

Pond 6P: Inflow=0.51 cfs 0.037 af
Primary=0.51 cfs 0.037 af

Pond 7P: Inflow=1.03 cfs 0.098 af
Primary=1.03 cfs 0.098 af

Pond 8P: Inflow=1.33 cfs 0.099 af
Primary=1.33 cfs 0.099 af

Pond 10P: Inflow=1.60 cfs 0.147 af
Primary=1.60 cfs 0.147 af

Pond 11P: Inflow=0.74 cfs 0.061 af
Primary=0.74 cfs 0.061 af

Pond 12P: Inflow=1.57 cfs 0.128 af
Primary=1.57 cfs 0.128 af

Pond 13.5P: CB 13796 Peak Elev=42.81' Inflow=1.10 cfs 0.045 af
Primary=1.10 cfs 0.045 af Secondary=0.00 cfs 0.000 af Outflow=1.10 cfs 0.045 af

Pond 13P: CB at Parking Garage Entrance Peak Elev=66.29' Inflow=1.94 cfs 0.143 af
Primary=1.29 cfs 0.136 af Secondary=0.65 cfs 0.007 af Outflow=1.94 cfs 0.143 af

Pond CB-63: Peak Elev=60.68' Storage=11 cf Inflow=2.33 cfs 0.197 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=2.33 cfs 0.197 af

Pond DMH 20: Peak Elev=38.30' Inflow=1.72 cfs 0.094 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=1.72 cfs 0.094 af

Pond hil-01: Inflow=1.85 cfs 0.151 af
Primary=1.85 cfs 0.151 af

Pond hil-02: Inflow=11.25 cfs 0.883 af
Primary=11.25 cfs 0.883 af

Pond OS-1.: CB Peak Elev=55.22' Inflow=0.78 cfs 0.065 af
Primary=0.65 cfs 0.064 af Secondary=0.13 cfs 0.001 af Outflow=0.78 cfs 0.065 af

Pond OS-2.: CB 16258 Peak Elev=83.51' Inflow=2.34 cfs 0.194 af
Primary=2.28 cfs 0.194 af Secondary=0.06 cfs 0.000 af Outflow=2.34 cfs 0.194 af

Pond SMH 1: esmh-13952 Peak Elev=45.84' Inflow=5.83 cfs 0.509 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0660 '/' Outflow=5.83 cfs 0.509 af

Pond SMH-13932: esmh-13932 Peak Elev=41.96' Inflow=6.45 cfs 0.572 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=6.45 cfs 0.572 af

Pond SMH-20: Inflow=4.56 cfs 0.372 af
Primary=4.56 cfs 0.372 af

Link SP-C1: Inflow=1.28 cfs 0.093 af
Primary=1.28 cfs 0.093 af

Link SP-C2: Inflow=6.45 cfs 0.572 af
Primary=6.45 cfs 0.572 af

Link SP-C3: Inflow=1.72 cfs 0.094 af
Primary=1.72 cfs 0.094 af

Link SP-C4: Inflow=14.04 cfs 1.117 af
Primary=14.04 cfs 1.117 af

Link SP-C5: Inflow=1.60 cfs 0.147 af
Primary=1.60 cfs 0.147 af

Total Runoff Area = 15.783 ac Runoff Volume = 2.219 af Average Runoff Depth = 1.69"
26.42% Pervious = 4.170 ac 73.58% Impervious = 11.613 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=2.72"
Flow Length=229' Tc=6.0 min CN=82 Runoff=1.40 cfs 0.101 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=2.54 cfs 0.211 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=2.72"
Flow Length=284' Tc=6.0 min CN=82 Runoff=1.00 cfs 0.072 af

Subcatchment2S: Runoff Area=16,157 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=244' Tc=6.0 min CN=98 Runoff=1.63 cfs 0.135 af

Subcatchment3S: Runoff Area=14,974 sf 79.46% Impervious Runoff Depth=3.10"
Flow Length=358' Tc=6.0 min CN=86 Runoff=1.21 cfs 0.089 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=2.34 cfs 0.194 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=3.10"
Flow Length=510' Tc=6.0 min CN=86 Runoff=10.09 cfs 0.740 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=3.10"
Flow Length=121' Tc=6.0 min CN=86 Runoff=0.89 cfs 0.066 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=1.39"
Flow Length=634' Tc=6.0 min CN=65 Runoff=3.18 cfs 0.246 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=2.29"
Flow Length=399' Tc=6.0 min CN=77 Runoff=2.75 cfs 0.200 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=0.90"
Flow Length=326' Tc=6.0 min CN=57 Runoff=0.71 cfs 0.064 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.11 cfs 0.092 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=200' Tc=6.0 min CN=98 Runoff=2.34 cfs 0.194 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=3.49"
Flow Length=196' Tc=6.2 min CN=90 Runoff=3.19 cfs 0.241 af

Subcatchment14S: Runoff Area=29,743 sf 49.37% Impervious Runoff Depth=1.60"
Flow Length=262' Tc=6.0 min CN=68 Runoff=1.21 cfs 0.091 af

Subcatchment15S: Runoff Area=27,590 sf 56.84% Impervious Runoff Depth=1.97"
Flow Length=384' Tc=6.0 min CN=73 Runoff=1.42 cfs 0.104 af

Subcatchment 17S: Runoff Area=40,392 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=188' Tc=6.0 min CN=98 Runoff=4.07 cfs 0.337 af

Subcatchment 18S: Visitor Garage Runoff Area=27,443 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=316' Tc=6.0 min CN=98 Runoff=2.77 cfs 0.229 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=3.39"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=1.31 cfs 0.110 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=3.39"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=3.92 cfs 0.330 af

Reach 2R: Weymouth Street Sewer Inflow=2.95 cfs 0.318 af
Outflow=2.95 cfs 0.318 af

Reach 3R: Offsite Forest Street Inflow=0.46 cfs 0.008 af
Outflow=0.46 cfs 0.008 af

Reach 15R: Inflow=0.81 cfs 0.006 af
Outflow=0.81 cfs 0.006 af

Reach 110: Avg. Flow Depth=0.47' Max Vel=4.21 fps Inflow=1.11 cfs 0.092 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=1.11 cfs 0.092 af

Reach 115: Avg. Flow Depth=0.89' Max Vel=5.64 fps Inflow=5.25 cfs 0.438 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=5.21 cfs 0.438 af

Reach 118: Avg. Flow Depth=0.62' Max Vel=10.90 fps Inflow=7.54 cfs 0.632 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=7.50 cfs 0.632 af

Reach 125: Avg. Flow Depth=0.47' Max Vel=6.45 fps Inflow=2.34 cfs 0.194 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=2.33 cfs 0.194 af

Reach 128: Avg. Flow Depth=0.72' Max Vel=3.83 fps Inflow=2.33 cfs 0.194 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=2.30 cfs 0.194 af

Reach 135: Avg. Flow Depth=0.31' Max Vel=9.87 fps Inflow=1.55 cfs 0.215 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=1.54 cfs 0.215 af

Reach 171: Avg. Flow Depth=0.31' Max Vel=16.76 fps Inflow=4.07 cfs 0.337 af
15.0" Round Pipe n=0.012 L=31.0' S=0.1755 '/' Capacity=29.32 cfs Outflow=4.07 cfs 0.337 af

Reach 172: Avg. Flow Depth=0.43' Max Vel=18.44 fps Inflow=6.81 cfs 0.566 af
15.0" Round Pipe n=0.012 L=38.0' S=0.1518 '/' Capacity=27.27 cfs Outflow=6.81 cfs 0.566 af

Reach 181: Avg. Flow Depth=0.41' Max Vel=9.21 fps Inflow=2.77 cfs 0.229 af
12.0" Round Pipe n=0.012 L=104.0' S=0.0425 '/' Capacity=7.96 cfs Outflow=2.75 cfs 0.229 af

Reach 210: Avg. Flow Depth=0.48' Max Vel=6.82 fps Inflow=2.54 cfs 0.211 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=2.53 cfs 0.211 af

Reach 215: Avg. Flow Depth=0.53' Max Vel=3.86 fps Inflow=1.63 cfs 0.135 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=1.62 cfs 0.135 af

Reach 216R: Avg. Flow Depth=0.41' Max Vel=19.62 fps Inflow=5.88 cfs 0.446 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=5.87 cfs 0.446 af

Reach 220: Avg. Flow Depth=0.67' Max Vel=9.84 fps Inflow=7.50 cfs 0.632 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=7.37 cfs 0.632 af

Reach 230: Avg. Flow Depth=0.42' Max Vel=20.94 fps Inflow=8.56 cfs 0.720 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=8.53 cfs 0.720 af

Reach 240: Avg. Flow Depth=0.67' Max Vel=24.51 fps Inflow=18.55 cfs 1.461 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=18.50 cfs 1.461 af

Reach 260: Avg. Flow Depth=0.79' Max Vel=15.91 fps Inflow=18.50 cfs 1.461 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=18.46 cfs 1.461 af

Reach 410: Avg. Flow Depth=0.71' Max Vel=3.95 fps Inflow=2.34 cfs 0.194 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=2.33 cfs 0.194 af

Reach 510: Avg. Flow Depth=0.47' Max Vel=21.44 fps Inflow=10.09 cfs 0.740 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=10.08 cfs 0.740 af

Reach 810: Avg. Flow Depth=0.27' Max Vel=16.46 fps Inflow=2.75 cfs 0.200 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=2.73 cfs 0.200 af

Reach 820: Avg. Flow Depth=0.32' Max Vel=12.61 fps Inflow=2.73 cfs 0.200 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=2.70 cfs 0.200 af

Pond 2P: Peak Elev=107.44' Storage=6 cf Inflow=1.00 cfs 0.072 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=1.00 cfs 0.072 af

Pond 3P: Inflow=1.21 cfs 0.089 af
Primary=1.21 cfs 0.089 af

Pond 5P: Inflow=10.09 cfs 0.740 af
Primary=10.09 cfs 0.740 af

Pond 6P: Inflow=0.89 cfs 0.066 af
Primary=0.89 cfs 0.066 af

Pond 7P: Inflow=3.18 cfs 0.246 af
Primary=3.18 cfs 0.246 af

Pond 8P: Inflow=2.75 cfs 0.200 af
Primary=2.75 cfs 0.200 af

Pond 10P: Inflow=3.01 cfs 0.258 af
Primary=3.01 cfs 0.258 af

Pond 11P: Inflow=1.11 cfs 0.092 af
Primary=1.11 cfs 0.092 af

Pond 12P: Inflow=2.34 cfs 0.194 af
Primary=2.34 cfs 0.194 af

Pond 13.5P: CB 13796 Peak Elev=43.10' Inflow=3.67 cfs 0.129 af
Primary=2.86 cfs 0.123 af Secondary=0.81 cfs 0.006 af Outflow=3.67 cfs 0.129 af

Pond 13P: CB at Parking Garage Entrance Peak Elev=66.41' Inflow=4.01 cfs 0.253 af
Primary=1.55 cfs 0.215 af Secondary=2.47 cfs 0.038 af Outflow=4.01 cfs 0.253 af

Pond CB-63: Peak Elev=62.71' Storage=38 cf Inflow=5.88 cfs 0.446 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=5.88 cfs 0.446 af

Pond DMH 20: Peak Elev=39.37' Inflow=4.28 cfs 0.227 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=4.28 cfs 0.227 af

Pond hil-01: Inflow=2.77 cfs 0.229 af
Primary=2.77 cfs 0.229 af

Pond hil-02: Inflow=18.50 cfs 1.461 af
Primary=18.50 cfs 1.461 af

Pond OS-1.: CB Peak Elev=55.26' Inflow=1.31 cfs 0.110 af
Primary=0.85 cfs 0.102 af Secondary=0.46 cfs 0.008 af Outflow=1.31 cfs 0.110 af

Pond OS-2.: CB 16258 Peak Elev=83.61' Inflow=3.92 cfs 0.330 af
Primary=2.95 cfs 0.318 af Secondary=0.97 cfs 0.013 af Outflow=3.92 cfs 0.330 af

Pond SMH 1: esmh-13952 Peak Elev=46.32' Inflow=8.33 cfs 0.781 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0660 '/' Outflow=8.33 cfs 0.781 af

Pond SMH-13932: esmh-13932 Peak Elev=42.54' Inflow=9.14 cfs 0.884 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=9.14 cfs 0.884 af

Pond SMH-20: Inflow=6.81 cfs 0.566 af
Primary=6.81 cfs 0.566 af

Link SP-C1: Inflow=2.39 cfs 0.174 af
Primary=2.39 cfs 0.174 af

Link SP-C2: Inflow=9.14 cfs 0.884 af
Primary=9.14 cfs 0.884 af

Link SP-C3: Inflow=4.28 cfs 0.227 af
Primary=4.28 cfs 0.227 af

Link SP-C4: Inflow=25.22 cfs 1.972 af
Primary=25.22 cfs 1.972 af

Link SP-C5: Inflow=3.01 cfs 0.258 af
Primary=3.01 cfs 0.258 af

Total Runoff Area = 15.783 ac Runoff Volume = 3.847 af Average Runoff Depth = 2.92"
26.42% Pervious = 4.170 ac 73.58% Impervious = 11.613 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=3.80"
Flow Length=229' Tc=6.0 min CN=82 Runoff=1.93 cfs 0.141 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=3.21 cfs 0.268 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=3.80"
Flow Length=284' Tc=6.0 min CN=82 Runoff=1.38 cfs 0.101 af

Subcatchment2S: Runoff Area=16,157 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=244' Tc=6.0 min CN=98 Runoff=2.06 cfs 0.172 af

Subcatchment3S: Runoff Area=14,974 sf 79.46% Impervious Runoff Depth=4.22"
Flow Length=358' Tc=6.0 min CN=86 Runoff=1.63 cfs 0.121 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=2.96 cfs 0.247 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=4.22"
Flow Length=510' Tc=6.0 min CN=86 Runoff=13.59 cfs 1.009 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=4.22"
Flow Length=121' Tc=6.0 min CN=86 Runoff=1.20 cfs 0.089 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=2.21"
Flow Length=634' Tc=6.0 min CN=65 Runoff=5.25 cfs 0.390 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=3.31"
Flow Length=399' Tc=6.0 min CN=77 Runoff=3.97 cfs 0.288 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=1.56"
Flow Length=326' Tc=6.0 min CN=57 Runoff=1.39 cfs 0.111 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.41 cfs 0.118 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=200' Tc=6.0 min CN=98 Runoff=2.96 cfs 0.248 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=4.65"
Flow Length=196' Tc=6.2 min CN=90 Runoff=4.19 cfs 0.320 af

Subcatchment14S: Runoff Area=29,743 sf 49.37% Impervious Runoff Depth=2.47"
Flow Length=262' Tc=6.0 min CN=68 Runoff=1.92 cfs 0.140 af

Subcatchment15S: Runoff Area=27,590 sf 56.84% Impervious Runoff Depth=2.92"
Flow Length=384' Tc=6.0 min CN=73 Runoff=2.13 cfs 0.154 af

Subcatchment 17S: Runoff Area=40,392 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=188' Tc=6.0 min CN=98 Runoff=5.15 cfs 0.430 af

Subcatchment 18S: Visitor Garage Runoff Area=27,443 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=316' Tc=6.0 min CN=98 Runoff=3.50 cfs 0.292 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=4.54"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=1.73 cfs 0.148 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=4.54"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=5.17 cfs 0.442 af

Reach 2R: Weymouth Street Sewer Inflow=3.31 cfs 0.412 af
Outflow=3.31 cfs 0.412 af

Reach 3R: Offsite Forest Street Inflow=0.73 cfs 0.016 af
Outflow=0.73 cfs 0.016 af

Reach 15R: Inflow=2.41 cfs 0.027 af
Outflow=2.41 cfs 0.027 af

Reach 110: Avg. Flow Depth=0.61' Max Vel=4.27 fps Inflow=1.41 cfs 0.118 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=1.39 cfs 0.118 af

Reach 115: Avg. Flow Depth=1.15' Max Vel=5.72 fps Inflow=6.64 cfs 0.558 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=6.57 cfs 0.558 af

Reach 118: Avg. Flow Depth=0.71' Max Vel=11.58 fps Inflow=9.50 cfs 0.805 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=9.46 cfs 0.805 af

Reach 125: Avg. Flow Depth=0.54' Max Vel=6.84 fps Inflow=2.96 cfs 0.248 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=2.95 cfs 0.248 af

Reach 128: Avg. Flow Depth=1.00' Max Vel=3.87 fps Inflow=2.95 cfs 0.248 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=2.79 cfs 0.248 af

Reach 135: Avg. Flow Depth=0.32' Max Vel=10.11 fps Inflow=1.70 cfs 0.273 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=1.69 cfs 0.273 af

Reach 171: Avg. Flow Depth=0.35' Max Vel=17.93 fps Inflow=5.15 cfs 0.430 af
15.0" Round Pipe n=0.012 L=31.0' S=0.1755 '/' Capacity=29.32 cfs Outflow=5.14 cfs 0.430 af

Reach 172: Avg. Flow Depth=0.48' Max Vel=19.67 fps Inflow=8.62 cfs 0.722 af
15.0" Round Pipe n=0.012 L=38.0' S=0.1518 '/' Capacity=27.27 cfs Outflow=8.61 cfs 0.722 af

Reach 181: Avg. Flow Depth=0.46' Max Vel=9.79 fps Inflow=3.50 cfs 0.292 af
12.0" Round Pipe n=0.012 L=104.0' S=0.0425 '/' Capacity=7.96 cfs Outflow=3.48 cfs 0.292 af

Reach 210: Avg. Flow Depth=0.55' Max Vel=7.22 fps Inflow=3.21 cfs 0.268 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=3.20 cfs 0.268 af

Reach 215: Avg. Flow Depth=0.61' Max Vel=4.07 fps Inflow=2.06 cfs 0.172 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=2.04 cfs 0.172 af

Reach 216R: Avg. Flow Depth=0.52' Max Vel=22.00 fps Inflow=9.15 cfs 0.678 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=9.15 cfs 0.678 af

Reach 220: Avg. Flow Depth=0.76' Max Vel=10.44 fps Inflow=9.46 cfs 0.805 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=9.32 cfs 0.805 af

Reach 230: Avg. Flow Depth=0.48' Max Vel=22.44 fps Inflow=10.92 cfs 0.926 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=10.89 cfs 0.926 af

Reach 240: Avg. Flow Depth=0.78' Max Vel=26.27 fps Inflow=24.37 cfs 1.935 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=24.31 cfs 1.935 af

Reach 260: Avg. Flow Depth=0.93' Max Vel=17.11 fps Inflow=24.31 cfs 1.935 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=24.27 cfs 1.935 af

Reach 410: Avg. Flow Depth=0.90' Max Vel=4.02 fps Inflow=2.96 cfs 0.247 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=2.94 cfs 0.247 af

Reach 510: Avg. Flow Depth=0.55' Max Vel=23.28 fps Inflow=13.59 cfs 1.009 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=13.57 cfs 1.009 af

Reach 810: Avg. Flow Depth=0.32' Max Vel=18.26 fps Inflow=3.97 cfs 0.288 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=3.94 cfs 0.288 af

Reach 820: Avg. Flow Depth=0.39' Max Vel=13.96 fps Inflow=3.94 cfs 0.288 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=3.91 cfs 0.288 af

Pond 2P: Peak Elev=107.53' Storage=7 cf Inflow=1.38 cfs 0.101 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=1.38 cfs 0.101 af

Pond 3P: Inflow=1.63 cfs 0.121 af
Primary=1.63 cfs 0.121 af

Pond 5P: Inflow=13.59 cfs 1.009 af
Primary=13.59 cfs 1.009 af

Pond 6P: Inflow=1.20 cfs 0.089 af
Primary=1.20 cfs 0.089 af

Pond 7P: Inflow=5.25 cfs 0.390 af
Primary=5.25 cfs 0.390 af

Pond 8P: Inflow=3.97 cfs 0.288 af
Primary=3.97 cfs 0.288 af

Pond 10P: Inflow=4.07 cfs 0.358 af
Primary=4.07 cfs 0.358 af

Pond 11P: Inflow=1.41 cfs 0.118 af
Primary=1.41 cfs 0.118 af

Pond 12P: Inflow=2.96 cfs 0.248 af
Primary=2.96 cfs 0.248 af

Pond 13.5P: CB 13796 Peak Elev=43.21' Inflow=6.05 cfs 0.218 af
Primary=3.64 cfs 0.190 af Secondary=2.41 cfs 0.027 af Outflow=6.05 cfs 0.218 af

Pond 13P: CB at Parking Garage Entrance Peak Elev=66.50' Inflow=5.84 cfs 0.351 af
Primary=1.70 cfs 0.273 af Secondary=4.14 cfs 0.077 af Outflow=5.84 cfs 0.351 af

Pond CB-63: Peak Elev=66.15' Storage=81 cf Inflow=9.16 cfs 0.678 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=9.15 cfs 0.678 af

Pond DMH 20: Peak Elev=40.41' Inflow=5.76 cfs 0.345 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=5.76 cfs 0.345 af

Pond hil-01: Inflow=3.50 cfs 0.292 af
Primary=3.50 cfs 0.292 af

Pond hil-02: Inflow=24.31 cfs 1.935 af
Primary=24.31 cfs 1.935 af

Pond OS-1.: CB Peak Elev=55.29' Inflow=1.73 cfs 0.148 af
Primary=1.00 cfs 0.132 af Secondary=0.73 cfs 0.016 af Outflow=1.73 cfs 0.148 af

Pond OS-2.: CB 16258 Peak Elev=83.68' Inflow=5.17 cfs 0.442 af
Primary=3.31 cfs 0.412 af Secondary=1.86 cfs 0.030 af Outflow=5.17 cfs 0.442 af

Pond SMH 1: esmh-13952 Peak Elev=46.82' Inflow=10.28 cfs 0.995 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0660 '/' Outflow=10.28 cfs 0.995 af

Pond SMH-13932: esmh-13932 Peak Elev=43.13' Inflow=11.23 cfs 1.128 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=11.23 cfs 1.128 af

Pond SMH-20: Inflow=8.62 cfs 0.722 af
Primary=8.62 cfs 0.722 af

Link SP-C1: Inflow=3.31 cfs 0.242 af
Primary=3.31 cfs 0.242 af

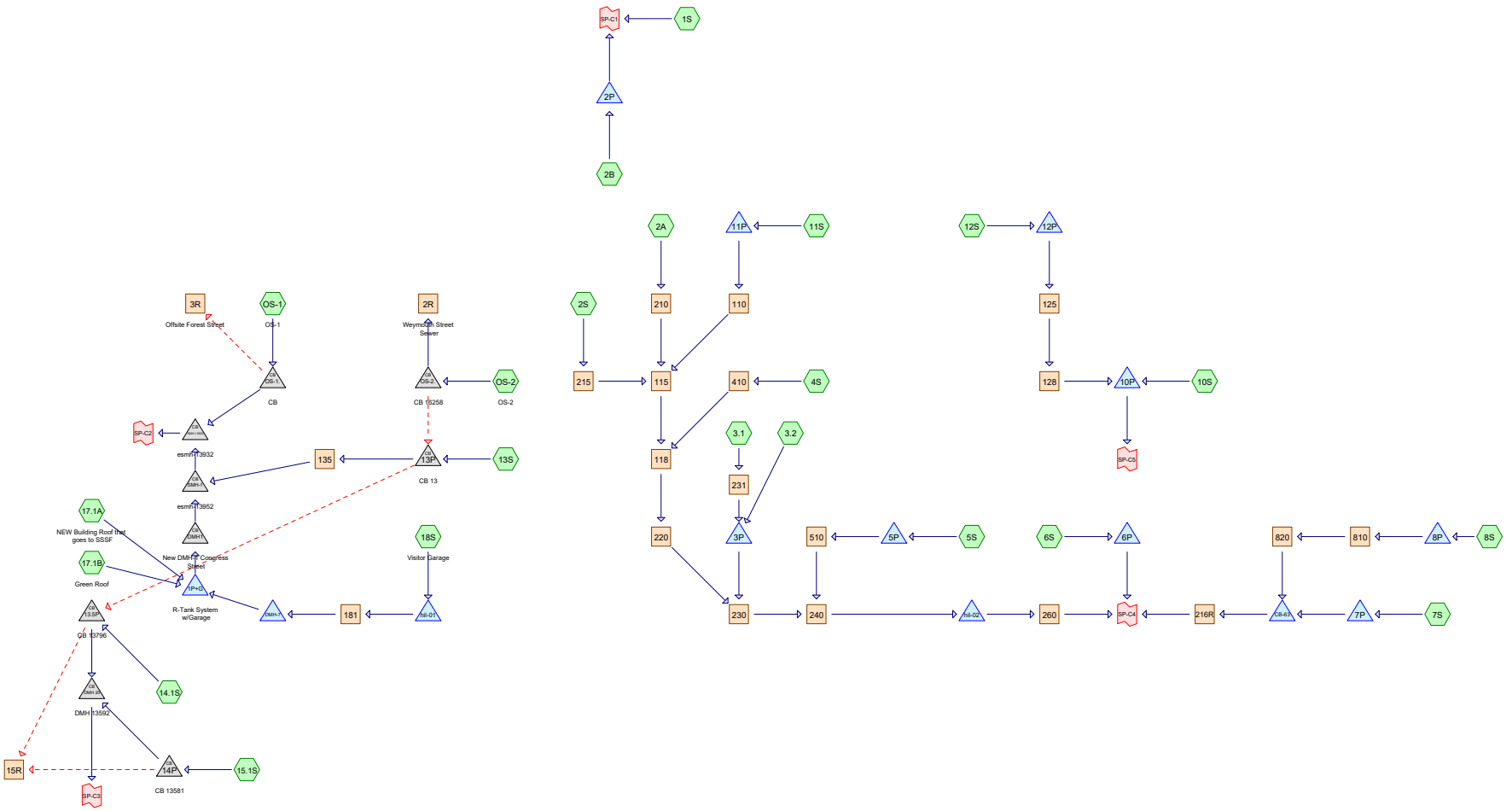
Link SP-C2: Inflow=11.23 cfs 1.128 af
Primary=11.23 cfs 1.128 af

Link SP-C3: Inflow=5.76 cfs 0.345 af
Primary=5.76 cfs 0.345 af

Link SP-C4: Inflow=34.61 cfs 2.702 af
Primary=34.61 cfs 2.702 af

Link SP-C5: Inflow=4.07 cfs 0.358 af
Primary=4.07 cfs 0.358 af

Total Runoff Area = 15.783 ac Runoff Volume = 5.230 af Average Runoff Depth = 3.98"
26.42% Pervious = 4.170 ac 73.58% Impervious = 11.613 ac



Subcat Reach Pond Link

Routing Diagram for 15466 - Congress CD Post Dev 20181025

Prepared by {enter your company name here}, Printed 10/30/2018

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.026	39	>75% Grass cover, Good, HSG A (1S, 2B, 2S, 3.1, 3.2, 5S, 6S, 8S, 10S, 14.1S, 15.1S)
0.276	86	Green roof (no Walkways) (17.1B)
6.639	98	Paved parking (1S, 2A, 2B, 2S, 3.1, 3.2, 4S, 5S, 6S, 7S, 8S, 10S, 11S, 12S, 13S, 14.1S, 15.1S, 18S)
0.028	98	Paved parking & roofs (17.1A)
3.260	98	Roofs (2S, 5S, 6S, 8S, 10S, 17.1A, 17.1B)
1.998	89	Urban commercial, 85% imp, HSG A (13S, OS-1, OS-2)
0.039	98	Walkways (17.1B)
1.517	43	Woods/grass comb., Fair, HSG A (7S, 8S, 13S)
15.783	**84**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=0.11"
Flow Length=229' Tc=6.0 min CN=82 Runoff=0.03 cfs 0.004 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=0.79"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=0.50 cfs 0.038 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=0.11"
Flow Length=284' Tc=6.0 min CN=82 Runoff=0.02 cfs 0.003 af

Subcatchment2S: Runoff Area=16,157 sf 86.26% Impervious Runoff Depth=0.32"
Flow Length=244' Tc=6.0 min CN=90 Runoff=0.13 cfs 0.010 af

Subcatchment3.1: Runoff Area=10,051 sf 83.47% Impervious Runoff Depth=0.25"
Flow Length=250' Tc=6.0 min CN=88 Runoff=0.06 cfs 0.005 af

Subcatchment3.2: Runoff Area=4,089 sf 68.18% Impervious Runoff Depth=0.07"
Flow Length=66' Slope=0.0250 '/' Tc=6.0 min CN=79 Runoff=0.00 cfs 0.001 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=0.79"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=0.46 cfs 0.035 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=0.20"
Flow Length=510' Tc=6.0 min CN=86 Runoff=0.53 cfs 0.047 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=0.20"
Flow Length=121' Tc=6.0 min CN=86 Runoff=0.05 cfs 0.004 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=0.00"
Flow Length=634' Tc=6.0 min CN=65 Runoff=0.00 cfs 0.000 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=0.05"
Flow Length=399' Tc=6.0 min CN=77 Runoff=0.01 cfs 0.004 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=0.00"
Flow Length=326' Tc=6.0 min CN=57 Runoff=0.00 cfs 0.000 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=0.79"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=0.22 cfs 0.017 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=0.79"
Flow Length=200' Tc=6.0 min CN=98 Runoff=0.46 cfs 0.035 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=0.32"
Flow Length=196' Tc=6.2 min CN=90 Runoff=0.29 cfs 0.022 af

Subcatchment14.1S: Runoff Area=22,477 sf 88.74% Impervious Runoff Depth=0.36"
Flow Length=325' Tc=6.0 min CN=91 Runoff=0.21 cfs 0.015 af

Subcatchment 15.1S: Runoff Area=18,644 sf 56.89% Impervious Runoff Depth=0.02"
Flow Length=383' Tc=6.0 min CN=73 Runoff=0.00 cfs 0.001 af

Subcatchment 17.1A: NEW Building Roof Runoff Area=43,616 sf 100.00% Impervious Runoff Depth=0.79"
Tc=6.0 min CN=98 Runoff=0.87 cfs 0.066 af

Subcatchment 17.1B: Green Roof Runoff Area=14,879 sf 19.06% Impervious Runoff Depth=0.25"
Flow Length=188' Tc=6.0 min CN=88 Runoff=0.09 cfs 0.007 af

Subcatchment 18S: Visitor Garage Runoff Area=26,386 sf 100.00% Impervious Runoff Depth=0.79"
Flow Length=264' Tc=6.0 min CN=98 Runoff=0.53 cfs 0.040 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=0.28"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=0.10 cfs 0.009 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=0.28"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=0.31 cfs 0.028 af

Reach 2R: Weymouth Street Sewer Inflow=0.31 cfs 0.028 af
Outflow=0.31 cfs 0.028 af

Reach 3R: Offsite Forest Street Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach 15R: Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach 110: Avg. Flow Depth=0.19' Max Vel=2.79 fps Inflow=0.22 cfs 0.017 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=0.22 cfs 0.017 af

Reach 115: Avg. Flow Depth=0.31' Max Vel=3.52 fps Inflow=0.84 cfs 0.065 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=0.83 cfs 0.065 af

Reach 118: Avg. Flow Depth=0.25' Max Vel=6.58 fps Inflow=1.29 cfs 0.100 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=1.28 cfs 0.100 af

Reach 125: Avg. Flow Depth=0.20' Max Vel=4.10 fps Inflow=0.46 cfs 0.035 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=0.46 cfs 0.035 af

Reach 128: Avg. Flow Depth=0.28' Max Vel=2.54 fps Inflow=0.46 cfs 0.035 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=0.45 cfs 0.035 af

Reach 135: Avg. Flow Depth=0.13' Max Vel=6.13 fps Inflow=0.29 cfs 0.022 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=0.28 cfs 0.022 af

Reach 181: Avg. Flow Depth=0.30' Max Vel=2.69 fps Inflow=0.53 cfs 0.040 af
12.0" Round Pipe n=0.012 L=60.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=0.52 cfs 0.040 af

Reach 210: Avg. Flow Depth=0.21' Max Vel=4.34 fps Inflow=0.50 cfs 0.038 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=0.50 cfs 0.038 af

Reach 215: Avg. Flow Depth=0.14' Max Vel=1.89 fps Inflow=0.13 cfs 0.010 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=0.13 cfs 0.010 af

Reach 216R: Avg. Flow Depth=0.02' Max Vel=3.12 fps Inflow=0.01 cfs 0.004 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=0.01 cfs 0.004 af

Reach 220: Avg. Flow Depth=0.27' Max Vel=5.93 fps Inflow=1.28 cfs 0.100 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=1.23 cfs 0.100 af

Reach 230: Avg. Flow Depth=0.17' Max Vel=11.91 fps Inflow=1.29 cfs 0.105 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=1.28 cfs 0.105 af

Reach 231: Inflow=0.06 cfs 0.005 af
Outflow=0.06 cfs 0.005 af

Reach 240: Avg. Flow Depth=0.20' Max Vel=12.45 fps Inflow=1.80 cfs 0.153 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=1.78 cfs 0.153 af

Reach 260: Avg. Flow Depth=0.25' Max Vel=8.04 fps Inflow=1.78 cfs 0.153 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=1.77 cfs 0.153 af

Reach 410: Avg. Flow Depth=0.28' Max Vel=2.62 fps Inflow=0.46 cfs 0.035 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=0.46 cfs 0.035 af

Reach 510: Avg. Flow Depth=0.11' Max Vel=8.95 fps Inflow=0.53 cfs 0.047 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=0.52 cfs 0.047 af

Reach 810: Avg. Flow Depth=0.02' Max Vel=3.26 fps Inflow=0.01 cfs 0.004 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=0.01 cfs 0.004 af

Reach 820: Avg. Flow Depth=0.02' Max Vel=2.55 fps Inflow=0.01 cfs 0.004 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=0.01 cfs 0.004 af

Pond 1P+G: R-Tank System w/Garage Peak Elev=50.62' Storage=4,017 cf Inflow=1.48 cfs 0.113 af
Outflow=0.04 cfs 0.027 af

Pond 2P: Peak Elev=107.03' Storage=0 cf Inflow=0.02 cfs 0.003 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=0.02 cfs 0.003 af

Pond 3P: Inflow=0.06 cfs 0.005 af
Primary=0.06 cfs 0.005 af

Pond 5P: Inflow=0.53 cfs 0.047 af
Primary=0.53 cfs 0.047 af

Pond 6P: Inflow=0.05 cfs 0.004 af
Primary=0.05 cfs 0.004 af

Pond 7P: Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Pond 8P: Inflow=0.01 cfs 0.004 af
Primary=0.01 cfs 0.004 af

Pond 10P: Inflow=0.45 cfs 0.035 af
Primary=0.45 cfs 0.035 af

Pond 11P: Inflow=0.22 cfs 0.017 af
Primary=0.22 cfs 0.017 af

Pond 12P: Inflow=0.46 cfs 0.035 af
Primary=0.46 cfs 0.035 af

Pond 13.5P: CB 13796 Peak Elev=42.60' Inflow=0.21 cfs 0.015 af
Primary=0.21 cfs 0.015 af Secondary=0.00 cfs 0.000 af Outflow=0.21 cfs 0.015 af

Pond 13P: CB 13 Peak Elev=66.03' Inflow=0.29 cfs 0.022 af
Primary=0.29 cfs 0.022 af Secondary=0.00 cfs 0.000 af Outflow=0.29 cfs 0.022 af

Pond 14P: CB 13581 Peak Elev=42.50' Inflow=0.00 cfs 0.001 af
Primary=0.00 cfs 0.001 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.001 af

Pond CB-63: Peak Elev=59.84' Storage=1 cf Inflow=0.01 cfs 0.004 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=0.01 cfs 0.004 af

Pond DMH 20: DMH 13592 Peak Elev=37.81' Inflow=0.21 cfs 0.016 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=0.21 cfs 0.016 af

Pond DMH-7: Inflow=0.52 cfs 0.040 af
Primary=0.52 cfs 0.040 af

Pond DMH1: New DMH-1 Congress Street Peak Elev=45.77' Inflow=0.04 cfs 0.027 af
15.0" Round Culvert n=0.013 L=4.0' S=0.0050 '/' Outflow=0.04 cfs 0.027 af

Pond hil-01: Inflow=0.53 cfs 0.040 af
Primary=0.53 cfs 0.040 af

Pond hil-02: Inflow=1.78 cfs 0.153 af
Primary=1.78 cfs 0.153 af

Pond OS-1.: CB Peak Elev=55.05' Inflow=0.10 cfs 0.009 af
Primary=0.10 cfs 0.009 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.009 af

Pond OS-2.: CB 16258 Peak Elev=83.13' Inflow=0.31 cfs 0.028 af
Primary=0.31 cfs 0.028 af Secondary=0.00 cfs 0.000 af Outflow=0.31 cfs 0.028 af

Pond SMH-1: esmh-13952 Peak Elev=44.84' Inflow=0.28 cfs 0.049 af
18.0" Round Culvert n=0.012 L=41.0' S=0.0724 '/' Outflow=0.28 cfs 0.049 af

Pond SMH-13932: esmh-13932 Peak Elev=40.90' Inflow=0.37 cfs 0.059 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=0.37 cfs 0.059 af

Link SP-C1: Inflow=0.05 cfs 0.007 af
Primary=0.05 cfs 0.007 af

Link SP-C2: Inflow=0.37 cfs 0.059 af
Primary=0.37 cfs 0.059 af

Link SP-C3: Inflow=0.21 cfs 0.016 af
Primary=0.21 cfs 0.016 af

Link SP-C4: Inflow=1.82 cfs 0.161 af
Primary=1.82 cfs 0.161 af

Link SP-C5: Inflow=0.45 cfs 0.035 af
Primary=0.45 cfs 0.035 af

Total Runoff Area = 15.783 ac Runoff Volume = 0.392 af Average Runoff Depth = 0.30"
26.10% Pervious = 4.119 ac 73.90% Impervious = 11.664 ac

Summary for Subcatchment 1S:

Runoff = 0.03 cfs @ 12.16 hrs, Volume= 0.004 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	14,272	98	Paved parking
	5,174	39	>75% Grass cover, Good, HSG A
	19,446	82	Weighted Average
	5,174		26.61% Pervious Area
	14,272		73.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.0500	0.20		**Sheet Flow, SHEET A TO B** Grass: Short n= 0.150 P2= 3.00"
0.2	33	0.0500	3.35		**Shallow Concentrated Flow, SHALLOW B TO C** Grassed Waterway Kv= 15.0 fps
0.3	82	0.0420	4.16		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
0.1	74	0.0500	10.99	8.63	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
2.0					**Direct Entry, DIRECT**
6.0	229	Total			

Summary for Subcatchment 2A:

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.038 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	25,217	98	Paved parking
	25,217		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.60		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
1.3	112	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
3.9					**Direct Entry, DIRECT**
6.0	142	Total			

Summary for Subcatchment 2B:

Runoff = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	10,133	98	Paved parking
	3,735	39	>75% Grass cover, Good, HSG A
	13,868	82	Weighted Average
	3,735		26.93% Pervious Area
	10,133		73.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	30	0.0100	0.79		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.5	123	0.0380	3.96		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
2.0	131	0.0005	1.10	0.86	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
2.9					**Direct Entry, DIRECT**
6.0	284	Total			

Summary for Subcatchment 2S:

Runoff = 0.13 cfs @ 12.10 hrs, Volume= 0.010 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	11,481	98	Paved parking
	2,220	39	>75% Grass cover, Good, HSG A
*	2,456	98	Roofs
	16,157	90	Weighted Average
	2,220		13.74% Pervious Area
	13,937		86.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0180	1.00		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	78	0.0370	3.90		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	136	0.0107	5.08	3.99	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
4.8					**Direct Entry, DIRECT**
6.0	244	Total			

Summary for Subcatchment 3.1:

Runoff = 0.06 cfs @ 12.10 hrs, Volume= 0.005 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	1,661	39	>75% Grass cover, Good, HSG A
*	8,390	98	Paved parking
	10,051	88	Weighted Average
	1,661		16.53% Pervious Area
	8,390		83.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0250	1.14		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.6	220	0.0810	5.78		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
5.0					**Direct Entry, DIRECT**
6.0	250	Total			

Summary for Subcatchment 3.2:

Runoff = 0.00 cfs @ 12.36 hrs, Volume= 0.001 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	2,788	98	Paved parking
	1,301	39	>75% Grass cover, Good, HSG A
	4,089	79	Weighted Average
	1,301		31.82% Pervious Area
	2,788		68.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	66	0.0250	1.34		**Sheet Flow, SHEET A TO B**
					Smooth surfaces n= 0.011 P2= 3.00"
5.2					**Direct Entry, DIRECT**
6.0	66	Total			

Summary for Subcatchment 4S:

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	23,249	98	Paved parking
	23,249		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	50	0.0050	0.67		**Sheet Flow, SHEET A TO B**
					Smooth surfaces n= 0.011 P2= 3.00"
1.3	110	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C**
					Paved Kv= 20.3 fps
3.4					**Direct Entry, DIRECT**
6.0	160	Total			

Summary for Subcatchment 5S:

Runoff = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	25,085	98	Paved parking
	26,415	39	>75% Grass cover, Good, HSG A
*	73,528	98	Roofs
	125,028	86	Weighted Average
	26,415		21.13% Pervious Area
	98,613		78.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	35	0.0050	0.62		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
2.2	355	0.0050	2.65	0.93	**Pipe Channel, PIPE B TO C** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.1	35	0.0300	8.51	6.69	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.2	85	0.0160	6.22	4.88	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
2.6					**Direct Entry, DIRECT**
6.0	510	Total			

Summary for Subcatchment 6S:

Runoff = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	2,282	39	>75% Grass cover, Good, HSG A
*	501	98	Paved parking
*	8,302	98	Roofs
	11,085	86	Weighted Average
	2,282		20.59% Pervious Area
	8,803		79.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	30	0.0100	0.79		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	64	0.0100	3.75	1.31	**Pipe Channel, PIPE B TO C (ROOF DRAIN)** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
0.0	27	0.0740	10.20	3.56	**Pipe Channel, PIPE C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
5.1					**Direct Entry, DIRECT**
6.0	121	Total			

Summary for Subcatchment 7S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	36,084	98	Paved parking
	56,212	43	Woods/grass comb., Fair, HSG A
	92,296	65	Weighted Average
	56,212		60.90% Pervious Area
	36,084		39.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	75	0.0400	1.66		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.5	78	0.0180	2.72		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.7	219	0.0590	4.93		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
0.2	72	0.0970	6.32		**Shallow Concentrated Flow, SHALLOW D TO E** Paved Kv= 20.3 fps
0.2	190	0.1020	15.70	12.33	**Pipe Channel, PIPE E TO F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
3.6					**Direct Entry, DIRECT**
6.0	634	Total			

Summary for Subcatchment 8S:

Runoff = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	16,895	98	Paved parking
	7,542	43	Woods/grass comb., Fair, HSG A
	8,958	39	>75% Grass cover, Good, HSG A
*	12,138	98	Roofs
	45,533	77	Weighted Average
	16,500		36.24% Pervious Area
	29,033		63.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	40	0.0050	0.64		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	93	0.0100	4.91	3.86	**Pipe Channel, PIPE B TO C** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.5	135	0.0100	4.91	3.86	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.4	131	0.0100	4.91	3.86	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
3.8					**Direct Entry, DIRECT**
6.0	399	Total			

Summary for Subcatchment 10S:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	25,937	39	>75% Grass cover, Good, HSG A
*	9,276	98	Paved parking
*	2,034	98	Roofs
	37,247	57	Weighted Average
	25,937		69.64% Pervious Area
	11,310		30.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	30	0.0400	1.38		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.1	37	0.0540	4.72		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	75	0.0200	2.87		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
0.3	113	0.0210	7.12	5.59	**Pipe Channel, PIPE D TO E** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.3	71	0.0050	3.47	2.73	**Pipe Channel, PIPE E TO F** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
4.5					**Direct Entry, DIRECT**
6.0	326	Total			

Summary for Subcatchment 11S:

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	11,050	98	Paved parking
	11,050		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.60		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.7	60	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
4.5					**Direct Entry, DIRECT**
6.0	90	Total			

Summary for Subcatchment 12S:

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	23,268	98	Paved parking
	23,268		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.60		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.9	80	0.0050	1.44		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.4	90	0.0100	3.75	1.31	**Pipe Channel, PIPE C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
3.9					**Direct Entry, DIRECT**
6.0	200	Total			

Summary for Subcatchment 13S:

Runoff = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	14,571	98	Paved parking
	2,309	43	Woods/grass comb., Fair, HSG A
	19,134	89	Urban commercial, 85% imp, HSG A
	36,014	90	Weighted Average
	5,179		14.38% Pervious Area
	30,835		85.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		**Sheet Flow, SHEET A TO B** Woods: Light underbrush n= 0.400 P2= 3.00"
0.2	51	0.6400	4.00		**Shallow Concentrated Flow, SHALLOW B TO C** Woodland Kv= 5.0 fps
0.4	105	0.0420	4.16		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
6.2	196	Total			

Summary for Subcatchment 14.1S:

Runoff = 0.21 cfs @ 12.10 hrs, Volume= 0.015 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	19,947	98	Paved parking
	2,530	39	>75% Grass cover, Good, HSG A
	22,477	91	Weighted Average
	2,530		11.26% Pervious Area
	19,947		88.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	30	0.0500	1.51		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
1.4	295	0.0320	3.63		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
4.3					**Direct Entry, DIRECT ENTRY**
6.0	325	Total			

Summary for Subcatchment 15.1S:

Runoff = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
	8,038	39	>75% Grass cover, Good, HSG A
*	10,606	98	Paved parking
	18,644	73	Weighted Average
	8,038		43.11% Pervious Area
	10,606		56.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	18	0.2770	0.33		**Sheet Flow, SHEET A TO B** Grass: Short n= 0.150 P2= 3.00"
0.4	170	0.1920	6.57		**Shallow Concentrated Flow, SHALLOW B TO C** Grassed Waterway Kv= 15.0 fps
0.6	195	0.0760	5.60		**Shallow Concentrated Flow, SHALLOW C TO D** Paved Kv= 20.3 fps
4.1					**Direct Entry, DIRECT**
6.0	383	Total			

Summary for Subcatchment 17.1A: NEW Building Roof that goes to SSSF

Runoff = 0.87 cfs @ 12.09 hrs, Volume= 0.066 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	1,202	98	Paved parking & roofs
*	42,414	98	Roofs
	43,616	98	Weighted Average
	43,616		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 17.1B: Green Roof

Runoff = 0.09 cfs @ 12.10 hrs, Volume= 0.007 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	12,043	86	Green roof (no Walkways)
*	1,692	98	Walkways
*	1,144	98	Roofs
	14,879	88	Weighted Average
	12,043		80.94% Pervious Area
	2,836		19.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	40	0.0100	0.84		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.1	14	0.0100	2.03		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.1	134	0.1600	15.00	5.24	**Pipe Channel, PIPE C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012
5.0					**Direct Entry, DIRECT**
6.0	188	Total			

Summary for Subcatchment 18S: Visitor Garage

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.040 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

	Area (sf)	CN	Description
*	26,386	98	Paved parking
	26,386		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	40	0.0100	0.84		**Sheet Flow, SHEET A TO B** Smooth surfaces n= 0.011 P2= 3.00"
0.3	141	0.2000	9.08		**Shallow Concentrated Flow, SHALLOW B TO C** Paved Kv= 20.3 fps
0.3	83	0.0110	5.15	4.05	**Pipe Channel, PIPE C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
4.6					**Direct Entry, DIRECT**
6.0	264	Total			

Summary for Subcatchment OS-1: OS-1

Runoff = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

Area (sf)	CN	Description
17,031	89	Urban commercial, 85% imp, HSG A
2,555		15.00% Pervious Area
14,476		85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	60	0.0400	0.20		**Sheet Flow, Sheet flow A-B** Grass: Short n= 0.150 P2= 3.00"
0.9	180	0.0250	3.21		**Shallow Concentrated Flow, Gutter Flow B-C (Russell Street)** Paved Kv= 20.3 fps
0.7	80	0.0100	2.03		**Shallow Concentrated Flow, Gutter Flow C-D (Hill Street)** Paved Kv= 20.3 fps
1.1	375	0.0800	5.74		**Shallow Concentrated Flow, Gutter Flow D-E (Ellsworth Street)** Paved Kv= 20.3 fps
2.2	605	0.0500	4.54		**Shallow Concentrated Flow, Gutter Flow E-F (Congress Street)** Paved Kv= 20.3 fps
10.0	1,300	Total			

Summary for Subcatchment OS-2: OS-2

Runoff = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Inch Rainfall=1.00"

Area (sf)	CN	Description
50,885	89	Urban commercial, 85% imp, HSG A
7,633		15.00% Pervious Area
43,252		85.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	60	0.0400	0.20		**Sheet Flow, Sheet flow A-B** Grass: Short n= 0.150 P2= 3.00"
0.9	180	0.0250	3.21		**Shallow Concentrated Flow, Gutter Flow B-C (Russell Street)** Paved Kv= 20.3 fps
0.7	80	0.0100	2.03		**Shallow Concentrated Flow, Gutter Flow C-D (Hill Street)** Paved Kv= 20.3 fps
1.1	375	0.0800	5.74		**Shallow Concentrated Flow, Gutter Flow D-E (Ellsworth Street)** Paved Kv= 20.3 fps
2.2	605	0.0500	4.54		**Shallow Concentrated Flow, Gutter Flow E-F (Congress Street)** Paved Kv= 20.3 fps
10.0	1,300	Total			

Summary for Reach 2R: Weymouth Street Sewer

Inflow Area = 1.168 ac, 85.00% Impervious, Inflow Depth = 0.28" for 1-Inch event
Inflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af
Outflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 3R: Offsite Forest Street

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 15R:

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

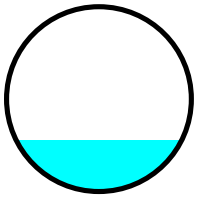
Summary for Reach 110:

Inflow Area = 0.254 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af
Outflow = 0.22 cfs @ 12.10 hrs, Volume= 0.017 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.79 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 0.9 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.31 cfs

8.0" Round Pipe
n= 0.012
Length= 51.0' Slope= 0.0100 '/'
Inlet Invert= 110.51', Outlet Invert= 110.00'



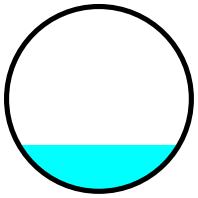
Summary for Reach 115:

Inflow Area = 1.203 ac, 95.77% Impervious, Inflow Depth = 0.65" for 1-Inch event
Inflow = 0.84 cfs @ 12.10 hrs, Volume= 0.065 af
Outflow = 0.83 cfs @ 12.11 hrs, Volume= 0.065 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.52 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.16 fps, Avg. Travel Time= 1.0 min

Peak Storage= 16 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.17 cfs

15.0" Round Pipe
n= 0.012
Length= 67.0' Slope= 0.0078 '/'
Inlet Invert= 110.11', Outlet Invert= 109.59'



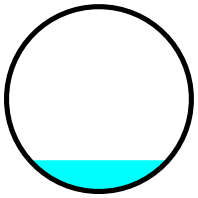
Summary for Reach 118:

Inflow Area = 1.737 ac, 97.07% Impervious, Inflow Depth = 0.69" for 1-Inch event
Inflow = 1.29 cfs @ 12.10 hrs, Volume= 0.100 af
Outflow = 1.28 cfs @ 12.11 hrs, Volume= 0.100 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.58 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.18 fps, Avg. Travel Time= 0.7 min

Peak Storage= 18 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 20.98 cfs

18.0" Round Pipe
n= 0.012
Length= 90.0' Slope= 0.0340 '/'
Inlet Invert= 109.44', Outlet Invert= 106.38'



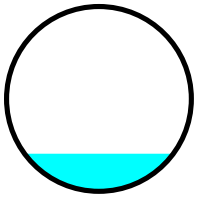
Summary for Reach 125:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.46 cfs @ 12.10 hrs, Volume= 0.035 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.10 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 1.0 min

Peak Storage= 9 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.21 cfs

12.0" Round Pipe
n= 0.012
Length= 79.0' Slope= 0.0182 '/'
Inlet Invert= 131.87', Outlet Invert= 130.43'



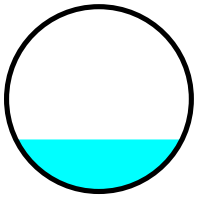
Summary for Reach 128:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.10 hrs, Volume= 0.035 af
Outflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.54 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.84 fps, Avg. Travel Time= 1.4 min

Peak Storage= 13 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.67 cfs

12.0" Round Pipe
n= 0.012
Length= 71.0' Slope= 0.0048 '/'
Inlet Invert= 130.40', Outlet Invert= 130.06'



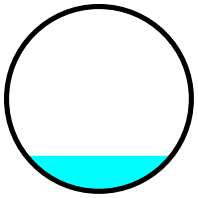
Summary for Reach 135:

Inflow Area = 0.827 ac, 85.62% Impervious, Inflow Depth = 0.32" for 1-Inch event
Inflow = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af
Outflow = 0.28 cfs @ 12.12 hrs, Volume= 0.022 af, Atten= 3%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.13 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.40 fps, Avg. Travel Time= 1.6 min

Peak Storage= 11 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 3.58 cfs

8.0" Round Pipe
n= 0.012
Length= 225.0' Slope= 0.0747 '/'
Inlet Invert= 62.69', Outlet Invert= 45.89'



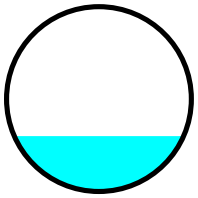
Summary for Reach 181:

Inflow Area = 0.606 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.53 cfs @ 12.09 hrs, Volume= 0.040 af
Outflow = 0.52 cfs @ 12.10 hrs, Volume= 0.040 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.69 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 1.1 min

Peak Storage= 12 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe
n= 0.012
Length= 60.0' Slope= 0.0050 '/'
Inlet Invert= 54.46', Outlet Invert= 54.16'



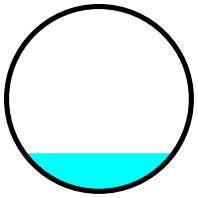
Summary for Reach 210:

Inflow Area = 0.579 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.50 cfs @ 12.10 hrs, Volume= 0.038 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.34 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.43 fps, Avg. Travel Time= 0.8 min

Peak Storage= 8 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.46 cfs

12.0" Round Pipe
n= 0.012
Length= 66.0' Slope= 0.0200 '/'
Inlet Invert= 122.35', Outlet Invert= 121.03'



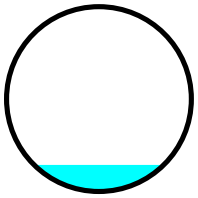
Summary for Reach 215:

Inflow Area = 0.371 ac, 86.26% Impervious, Inflow Depth = 0.32" for 1-Inch event
Inflow = 0.13 cfs @ 12.10 hrs, Volume= 0.010 af
Outflow = 0.13 cfs @ 12.11 hrs, Volume= 0.010 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.89 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.74 fps, Avg. Travel Time= 1.2 min

Peak Storage= 4 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.96 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 52.0' Slope= 0.0069 '/'
Inlet Invert= 121.67', Outlet Invert= 121.31'



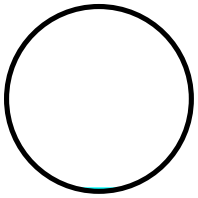
Summary for Reach 216R:

Inflow Area = 3.164 ac, 47.24% Impervious, Inflow Depth = 0.02" for 1-Inch event
Inflow = 0.01 cfs @ 12.52 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.52 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.12 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.27 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 12.52 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 16.96 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 12.0' Slope= 0.2267 '/'
Inlet Invert= 60.11', Outlet Invert= 57.39'



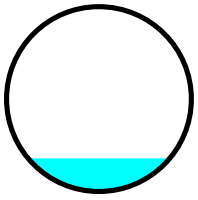
Summary for Reach 220:

Inflow Area = 1.737 ac, 97.07% Impervious, Inflow Depth = 0.69" for 1-Inch event
Inflow = 1.28 cfs @ 12.11 hrs, Volume= 0.100 af
Outflow = 1.23 cfs @ 12.13 hrs, Volume= 0.100 af, Atten= 4%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.93 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.97 fps, Avg. Travel Time= 1.8 min

Peak Storage= 47 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 18.30 cfs

18.0" Round Pipe
n= 0.012
Length= 218.0' Slope= 0.0259 '/'
Inlet Invert= 105.99', Outlet Invert= 100.35'



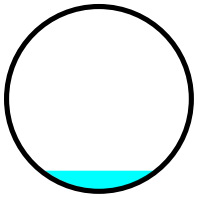
Summary for Reach 230:

Inflow Area = 2.062 ac, 94.23% Impervious, Inflow Depth = 0.61" for 1-Inch event
Inflow = 1.29 cfs @ 12.12 hrs, Volume= 0.105 af
Outflow = 1.28 cfs @ 12.13 hrs, Volume= 0.105 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 11.91 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.13 fps, Avg. Travel Time= 0.4 min

Peak Storage= 9 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 49.39 cfs

18.0" Round Pipe
n= 0.012
Length= 87.0' Slope= 0.1884 '/'
Inlet Invert= 100.16', Outlet Invert= 83.77'



Summary for Reach 231:

Inflow Area = 0.231 ac, 83.47% Impervious, Inflow Depth = 0.25" for 1-Inch event
Inflow = 0.06 cfs @ 12.10 hrs, Volume= 0.005 af
Outflow = 0.06 cfs @ 12.10 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

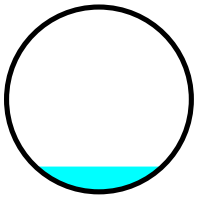
Summary for Reach 240:

Inflow Area = 4.932 ac, 85.29% Impervious, Inflow Depth = 0.37" for 1-Inch event
Inflow = 1.80 cfs @ 12.12 hrs, Volume= 0.153 af
Outflow = 1.78 cfs @ 12.13 hrs, Volume= 0.153 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.45 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.31 fps, Avg. Travel Time= 0.4 min

Peak Storage= 14 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.69 cfs

18.0" Round Pipe
n= 0.012
Length= 100.0' Slope= 0.1612 '/'
Inlet Invert= 67.96', Outlet Invert= 51.84'



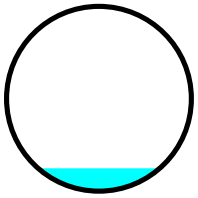
Summary for Reach 260:

Inflow Area = 4.932 ac, 85.29% Impervious, Inflow Depth = 0.37" for 1-Inch event
Inflow = 1.78 cfs @ 12.13 hrs, Volume= 0.153 af
Outflow = 1.77 cfs @ 12.13 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.04 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.79 fps, Avg. Travel Time= 0.3 min

Peak Storage= 11 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 55.59 cfs

24.0" Round Pipe
n= 0.012
Length= 48.0' Slope= 0.0515 '/'
Inlet Invert= 51.84', Outlet Invert= 49.37'



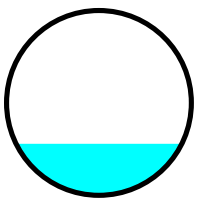
Summary for Reach 410:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.62 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 0.7 min

Peak Storage= 6 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.77 cfs

12.0" Round Pipe
n= 0.012
Length= 35.0' Slope= 0.0051 '/'
Inlet Invert= 110.68', Outlet Invert= 110.50'



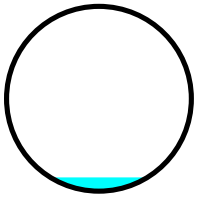
Summary for Reach 510:

Inflow Area = 2.870 ac, 78.87% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af
Outflow = 0.52 cfs @ 12.11 hrs, Volume= 0.047 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.95 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.94 fps, Avg. Travel Time= 0.3 min

Peak Storage= 4 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 47.85 cfs

18.0" Round Pipe
n= 0.012
Length= 62.0' Slope= 0.1768 '/'
Inlet Invert= 95.90', Outlet Invert= 84.94'



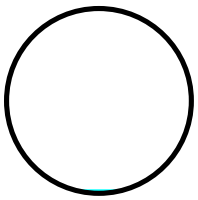
Summary for Reach 810:

Inflow Area = 1.045 ac, 63.76% Impervious, Inflow Depth = 0.05" for 1-Inch event
Inflow = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.47 hrs, Volume= 0.004 af, Atten= 1%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.26 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.35 fps, Avg. Travel Time= 1.5 min

Peak Storage= 1 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 17.81 cfs

12.0" Round Pipe
n= 0.012
Length= 210.0' Slope= 0.2129 '/'
Inlet Invert= 120.21', Outlet Invert= 75.50'



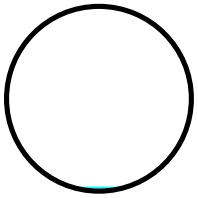
Summary for Reach 820:

Inflow Area = 1.045 ac, 63.76% Impervious, Inflow Depth = 0.05" for 1-Inch event
Inflow = 0.01 cfs @ 12.47 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.50 hrs, Volume= 0.004 af, Atten= 2%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.55 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.82 fps, Avg. Travel Time= 1.5 min

Peak Storage= 1 cf @ 12.48 hrs
Average Depth at Peak Storage= 0.02'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 12.32 cfs

12.0" Round Pipe
n= 0.012
Length= 164.0' Slope= 0.1020 '/'
Inlet Invert= 75.58', Outlet Invert= 58.86'



Summary for Pond 1P+G: R-Tank System w/Garage

Inflow Area = 1.949 ac, 85.81% Impervious, Inflow Depth = 0.70" for 1-Inch event
Inflow = 1.48 cfs @ 12.09 hrs, Volume= 0.113 af
Outflow = 0.04 cfs @ 15.15 hrs, Volume= 0.027 af, Atten= 98%, Lag= 183.4 min
Primary = 0.04 cfs @ 15.15 hrs, Volume= 0.027 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 50.62' @ 17.15 hrs Surf.Area= 3,087 sf Storage= 4,017 cf
Flood Elev= 60.04' Surf.Area= 3,269 sf Storage= 17,041 cf

Plug-Flow detention time= 535.9 min calculated for 0.027 af (24% of inflow)
Center-of-Mass det. time= 369.5 min (1,163.5 - 794.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	50.58'	973 cf	**8.50'W x 76.37'L x 5.75'H Field A** 3,732 cf Overall - 1,300 cf Embedded = 2,432 cf x 40.0% Voids
#2A	51.33'	1,300 cf	**Cultec R-902HD** x 20 Inside #1 Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf
#3B	48.37'	3,779 cf	**10.56'W x 189.32'L x 8.96'H Field B** 17,906 cf Overall - 8,458 cf Embedded = 9,449 cf x 40.0% Voids
#4B	48.37'	8,035 cf	**ACF R-Tank HD 5.0** x 395 Inside #3 Inside= 15.7"W x 83.5"H => 8.67 sf x 2.35'L = 20.3 cf Outside= 15.7"W x 83.5"H => 9.13 sf x 2.35'L = 21.4 cf 5 Rows of 79 Chambers
#5C	50.83'	286 cf	**8.50'W x 21.37'L x 5.75'H Field C** 1,044 cf Overall - 329 cf Embedded = 715 cf x 40.0% Voids
#6C	51.58'	329 cf	**Cultec R-902HD** x 5 Inside #5 Effective Size= 69.8"W x 48.0"H => 17.65 sf x 3.67'L = 64.7 cf Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap Cap Storage= +2.8 cf x 2 x 1 rows = 5.5 cf
#7D	48.37'	711 cf	**10.56'W x 41.53'L x 7.96'H Field D** 3,490 cf Overall - 1,713 cf Embedded = 1,777 cf x 40.0% Voids
#8D	48.37'	1,627 cf	**ACF R-Tank HD 5.0** x 80 Inside #7 Inside= 15.7"W x 83.5"H => 8.67 sf x 2.35'L = 20.3 cf Outside= 15.7"W x 83.5"H => 9.13 sf x 2.35'L = 21.4 cf 5 Rows of 16 Chambers
		17,041 cf	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard
Storage Group C created with Chamber Wizard
Storage Group D created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	45.94'	**12.0" Round Stromdrain** L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 45.94' / 45.76' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	46.04'	**1.5" Vert. Orifice/Grate** C= 0.600
#3	Device 2	48.37'	**2.410 in/hr Filtration over Surface area above 48.37'** Excluded Surface area = 2,438 sf
#4	Device 1	51.20'	**6.0" Vert. Orifice** C= 0.600
#5	Primary	52.20'	**0.4' long x 2.00' rise Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#6	Device 1	53.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.04 cfs @ 15.15 hrs HW=50.58' (Free Discharge)
- **1=Stromdrain** (Passes 0.04 cfs of 7.55 cfs potential flow)
  - **2=Orifice/Grate** (Passes 0.04 cfs of 0.13 cfs potential flow)
    - **3=Filtration** (Exfiltration Controls 0.04 cfs)
  - **4=Orifice** (Controls 0.00 cfs)
  - **6=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **5=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Summary for Pond 2P:

Inflow Area = 0.318 ac, 73.07% Impervious, Inflow Depth = 0.11" for 1-Inch event
Inflow = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af
Outflow = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.2 min
Primary = 0.02 cfs @ 12.16 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 107.03' @ 12.16 hrs Surf.Area= 13 sf Storage= 0 cf

Plug-Flow detention time= 0.3 min calculated for 0.003 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (928.3 - 928.0)

Volume	Invert	Avail.Storage	Storage Description
#1	107.00'	169 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
107.00	13	0	0
120.00	13	169	169

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	**18.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 107.00' / 106.50' S= 0.0100 '/' Cc= 0.900 n= 0.011, Flow Area= 1.77 sf

Primary OutFlow Max=0.00 cfs @ 12.16 hrs HW=107.03' (Free Discharge)
1=Culvert (Barrel Controls 0.00 cfs @ 0.81 fps)

Summary for Pond 3P:

Inflow Area = 0.325 ac, 79.05% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.06 cfs @ 12.11 hrs, Volume= 0.005 af
Primary = 0.06 cfs @ 12.11 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 5P:

Inflow Area = 2.870 ac, 78.87% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af
Primary = 0.53 cfs @ 12.11 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 6P:

Inflow Area = 0.254 ac, 79.41% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af
Primary = 0.05 cfs @ 12.11 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 7P:

Inflow Area = 2.119 ac, 39.10% Impervious, Inflow Depth = 0.00" for 1-Inch event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 8P:

Inflow Area = 1.045 ac, 63.76% Impervious, Inflow Depth = 0.05" for 1-Inch event
Inflow = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af
Primary = 0.01 cfs @ 12.44 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 10P:

Inflow Area = 1.389 ac, 57.14% Impervious, Inflow Depth = 0.30" for 1-Inch event
Inflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af
Primary = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 11P:

Inflow Area = 0.254 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af
Primary = 0.22 cfs @ 12.09 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 12P:

Inflow Area = 0.534 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Primary = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 13.5P: CB 13796

Inflow Area = 0.516 ac, 88.74% Impervious, Inflow Depth = 0.36" for 1-Inch event
Inflow = 0.21 cfs @ 12.10 hrs, Volume= 0.015 af
Outflow = 0.21 cfs @ 12.10 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.10 hrs, Volume= 0.015 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 42.60' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	38.86'	**10.0" Round 12" SD** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 38.86' / 37.64' S= 0.0813 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.55 sf
#2	Device 1	42.50'	**2.0' long Curb Inlet** 2 End Contraction(s)
#3	Secondary	43.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.20 cfs @ 12.10 hrs HW=42.60' (Free Discharge)
↑└**1=12" SD** (Passes 0.20 cfs of 4.79 cfs potential flow)
↑└**2=Curb Inlet** (Weir Controls 0.20 cfs @ 1.03 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=38.86' (Free Discharge)
↑└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 13P: CB 13

Inflow Area = 0.827 ac, 85.62% Impervious, Inflow Depth = 0.32" for 1-Inch event
Inflow = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af
Outflow = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min
Primary = 0.29 cfs @ 12.10 hrs, Volume= 0.022 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 66.03' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	66.00'	**1.0" x 3.0" Horiz. Grate X 24.00** C= 0.600 Limited to weir flow at low heads
#2	Secondary	66.20'	**5.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.28 cfs @ 12.10 hrs HW=66.03' (Free Discharge)
└**1=Grate** (Weir Controls 0.28 cfs @ 0.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=66.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 14P: CB 13581

Inflow Area = 0.428 ac, 56.89% Impervious, Inflow Depth = 0.02" for 1-Inch event
Inflow = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 15.12 hrs, Volume= 0.001 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 42.50' @ 15.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	40.62'	**8.0" Round 12" SD** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 40.62' / 39.00' S= 0.1080 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf
#2	Device 1	42.50'	**2.0' long Curb Inlet** 2 End Contraction(s)
#3	Secondary	43.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 15.12 hrs HW=42.50' (Free Discharge)
└**1=12" SD** (Passes 0.00 cfs of 2.09 cfs potential flow)
└**2=Curb Inlet** (Weir Controls 0.00 cfs @ 0.11 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=40.62' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond CB-63:

Inflow Area = 3.164 ac, 47.24% Impervious, Inflow Depth = 0.02" for 1-Inch event
Inflow = 0.01 cfs @ 12.50 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.52 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.8 min
Primary = 0.01 cfs @ 12.52 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 59.84' @ 12.52 hrs Surf.Area= 13 sf Storage= 1 cf

Plug-Flow detention time= 0.8 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (1,000.9 - 1,000.1)

Volume	Invert	Avail.Storage	Storage Description
#1	59.80'	81 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.80	13	0	0
66.00	13	81	81

Device	Routing	Invert	Outlet Devices
#1	Primary	59.80'	**12.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 59.80' / 58.46' S= 0.1340 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.01 cfs @ 12.52 hrs HW=59.84' (Free Discharge)
1=Culvert (Inlet Controls 0.01 cfs @ 0.71 fps)

Summary for Pond DMH 20: DMH 13592

Inflow Area = 0.944 ac, 74.30% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af
Outflow = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 37.81' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	37.59'	**12.0" Round 12" SD** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 37.59' / 35.00' S= 0.1295 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.10 hrs HW=37.81' (Free Discharge)
1=12" SD (Inlet Controls 0.21 cfs @ 1.60 fps)

Summary for Pond DMH-7:

Inflow Area = 0.606 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.52 cfs @ 12.10 hrs, Volume= 0.040 af
Primary = 0.52 cfs @ 12.10 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond DMH1: New DMH-1 Congress Street

Inflow Area = 1.949 ac, 85.81% Impervious, Inflow Depth = 0.17" for 1-Inch event
Inflow = 0.04 cfs @ 15.15 hrs, Volume= 0.027 af
Outflow = 0.04 cfs @ 15.15 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Primary = 0.04 cfs @ 15.15 hrs, Volume= 0.027 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 45.77' @ 15.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	45.66'	**15.0" Round Stormdrain** L= 4.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 45.66' / 45.64' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.04 cfs @ 15.15 hrs HW=45.77' (Free Discharge)
↑—**1=Stormdrain** (Barrel Controls 0.04 cfs @ 1.09 fps)

Summary for Pond hil-01:

Inflow Area = 0.606 ac,100.00% Impervious, Inflow Depth = 0.79" for 1-Inch event
Inflow = 0.53 cfs @ 12.09 hrs, Volume= 0.040 af
Primary = 0.53 cfs @ 12.09 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond hil-02:

Inflow Area = 4.932 ac, 85.29% Impervious, Inflow Depth = 0.37" for 1-Inch event
Inflow = 1.78 cfs @ 12.13 hrs, Volume= 0.153 af
Primary = 1.78 cfs @ 12.13 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond OS-1.: CB

Inflow Area = 0.391 ac, 85.00% Impervious, Inflow Depth = 0.28" for 1-Inch event
Inflow = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af
Outflow = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 12.16 hrs, Volume= 0.009 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 55.05' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	45.00'	**8.0" Round Stormdrain** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 45.00' / 44.44' S= 0.0373 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	55.00'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Secondary	55.20'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.07 cfs @ 12.16 hrs HW=55.05' (Free Discharge)
└**1=Stormdrain** (Passes 0.07 cfs of 5.24 cfs potential flow)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.07 cfs @ 0.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=45.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond OS-2.: CB 16258

Inflow Area = 1.168 ac, 85.00% Impervious, Inflow Depth = 0.28" for 1-Inch event
Inflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af
Outflow = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.16 hrs, Volume= 0.028 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 83.13' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	79.02'	**8.0" Round Stormdrain** L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.02' / 78.25' S= 0.0220 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	83.00'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#3	Secondary	83.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.30 cfs @ 12.16 hrs HW=83.13' (Free Discharge)
└**1=Stormdrain** (Passes 0.30 cfs of 3.12 cfs potential flow)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.30 cfs @ 1.18 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=79.02' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond SMH-1: esmh-13952

Inflow Area = 2.775 ac, 85.75% Impervious, Inflow Depth = 0.21" for 1-Inch event
Inflow = 0.28 cfs @ 12.12 hrs, Volume= 0.049 af
Outflow = 0.28 cfs @ 12.12 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.12 hrs, Volume= 0.049 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 44.84' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	44.61'	**18.0" Round Culvert** L= 41.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.61' / 41.64' S= 0.0724 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.27 cfs @ 12.12 hrs HW=44.84' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.27 cfs @ 1.62 fps)

Summary for Pond SMH-13932: esmh-13932

Inflow Area = 3.166 ac, 85.66% Impervious, Inflow Depth = 0.22" for 1-Inch event
Inflow = 0.37 cfs @ 12.13 hrs, Volume= 0.059 af
Outflow = 0.37 cfs @ 12.13 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.13 hrs, Volume= 0.059 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 40.90' @ 12.13 hrs
Flood Elev= 52.64'

Device	Routing	Invert	Outlet Devices
#1	Primary	40.64'	**18.0" Round Sewer** L= 45.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 40.64' / 38.00' S= 0.0587 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=0.36 cfs @ 12.13 hrs HW=40.90' (Free Discharge)
└**1=Sewer** (Inlet Controls 0.36 cfs @ 1.74 fps)

Summary for Link SP-C1:

Inflow Area = 0.765 ac, 73.26% Impervious, Inflow Depth = 0.11" for 1-Inch event
Inflow = 0.05 cfs @ 12.16 hrs, Volume= 0.007 af
Primary = 0.05 cfs @ 12.16 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C2:

Inflow Area = 3.166 ac, 85.66% Impervious, Inflow Depth = 0.22" for 1-Inch event
Inflow = 0.37 cfs @ 12.13 hrs, Volume= 0.059 af
Primary = 0.37 cfs @ 12.13 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C3:

Inflow Area = 0.944 ac, 74.30% Impervious, Inflow Depth = 0.20" for 1-Inch event
Inflow = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af
Primary = 0.21 cfs @ 12.10 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C4:

Inflow Area = 8.351 ac, 70.70% Impervious, Inflow Depth = 0.23" for 1-Inch event
Inflow = 1.82 cfs @ 12.13 hrs, Volume= 0.161 af
Primary = 1.82 cfs @ 12.13 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Link SP-C5:

Inflow Area = 1.389 ac, 57.14% Impervious, Inflow Depth = 0.30" for 1-Inch event
Inflow = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af
Primary = 0.45 cfs @ 12.11 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=1.46"
Flow Length=229' Tc=6.0 min CN=82 Runoff=0.75 cfs 0.054 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.70 cfs 0.138 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=1.46"
Flow Length=284' Tc=6.0 min CN=82 Runoff=0.53 cfs 0.039 af

Subcatchment2S: Runoff Area=16,157 sf 86.26% Impervious Runoff Depth=2.08"
Flow Length=244' Tc=6.0 min CN=90 Runoff=0.88 cfs 0.064 af

Subcatchment3.1: Runoff Area=10,051 sf 83.47% Impervious Runoff Depth=1.91"
Flow Length=250' Tc=6.0 min CN=88 Runoff=0.50 cfs 0.037 af

Subcatchment3.2: Runoff Area=4,089 sf 68.18% Impervious Runoff Depth=1.26"
Flow Length=66' Slope=0.0250 '/' Tc=6.0 min CN=79 Runoff=0.13 cfs 0.010 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.57 cfs 0.128 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=1.75"
Flow Length=510' Tc=6.0 min CN=86 Runoff=5.77 cfs 0.418 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=1.75"
Flow Length=121' Tc=6.0 min CN=86 Runoff=0.51 cfs 0.037 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=0.55"
Flow Length=634' Tc=6.0 min CN=65 Runoff=1.03 cfs 0.098 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=1.14"
Flow Length=399' Tc=6.0 min CN=77 Runoff=1.33 cfs 0.099 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=0.28"
Flow Length=326' Tc=6.0 min CN=57 Runoff=0.11 cfs 0.020 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=0.74 cfs 0.061 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=200' Tc=6.0 min CN=98 Runoff=1.57 cfs 0.128 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=2.08"
Flow Length=196' Tc=6.2 min CN=90 Runoff=1.94 cfs 0.143 af

Subcatchment14.1S: Runoff Area=22,477 sf 88.74% Impervious Runoff Depth=2.16"
Flow Length=325' Tc=6.0 min CN=91 Runoff=1.26 cfs 0.093 af

Subcatchment 15.1S: Runoff Area=18,644 sf 56.89% Impervious Runoff Depth=0.92"
Flow Length=383' Tc=6.0 min CN=73 Runoff=0.42 cfs 0.033 af

Subcatchment 17.1A: NEW Building Roof Runoff Area=43,616 sf 100.00% Impervious Runoff Depth=2.87"
Tc=6.0 min CN=98 Runoff=2.94 cfs 0.239 af

Subcatchment 17.1B: Green Roof Runoff Area=14,879 sf 19.06% Impervious Runoff Depth=1.91"
Flow Length=188' Tc=6.0 min CN=88 Runoff=0.75 cfs 0.054 af

Subcatchment 18S: Visitor Garage Runoff Area=26,386 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=264' Tc=6.0 min CN=98 Runoff=1.78 cfs 0.145 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=1.99"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=0.78 cfs 0.065 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=1.99"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=2.34 cfs 0.194 af

Reach 2R: Weymouth Street Sewer Inflow=2.28 cfs 0.194 af
Outflow=2.28 cfs 0.194 af

Reach 3R: Offsite Forest Street Inflow=0.13 cfs 0.001 af
Outflow=0.13 cfs 0.001 af

Reach 15R: Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Reach 110: Avg. Flow Depth=0.36' Max Vel=3.87 fps Inflow=0.74 cfs 0.061 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=0.74 cfs 0.061 af

Reach 115: Avg. Flow Depth=0.65' Max Vel=5.11 fps Inflow=3.30 cfs 0.263 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=3.27 cfs 0.263 af

Reach 118: Avg. Flow Depth=0.49' Max Vel=9.65 fps Inflow=4.83 cfs 0.391 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=4.80 cfs 0.391 af

Reach 125: Avg. Flow Depth=0.38' Max Vel=5.80 fps Inflow=1.57 cfs 0.128 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=1.56 cfs 0.128 af

Reach 128: Avg. Flow Depth=0.55' Max Vel=3.53 fps Inflow=1.56 cfs 0.128 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=1.54 cfs 0.128 af

Reach 135: Avg. Flow Depth=0.29' Max Vel=9.56 fps Inflow=1.37 cfs 0.137 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=1.36 cfs 0.137 af

Reach 181: Avg. Flow Depth=0.59' Max Vel=3.70 fps Inflow=1.78 cfs 0.145 af
12.0" Round Pipe n=0.012 L=60.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=1.76 cfs 0.145 af

Reach 210: Avg. Flow Depth=0.38' Max Vel=6.13 fps Inflow=1.70 cfs 0.138 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=1.69 cfs 0.138 af

Reach 215: Avg. Flow Depth=0.37' Max Vel=3.29 fps Inflow=0.88 cfs 0.064 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=0.87 cfs 0.064 af

Reach 216R: Avg. Flow Depth=0.25' Max Vel=15.09 fps Inflow=2.33 cfs 0.197 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=2.33 cfs 0.197 af

Reach 220: Avg. Flow Depth=0.52' Max Vel=8.72 fps Inflow=4.80 cfs 0.391 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=4.70 cfs 0.391 af

Reach 230: Avg. Flow Depth=0.33' Max Vel=18.24 fps Inflow=5.32 cfs 0.437 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=5.30 cfs 0.437 af

Reach 231: Inflow=0.50 cfs 0.037 af
Outflow=0.50 cfs 0.037 af

Reach 240: Avg. Flow Depth=0.50' Max Vel=21.28 fps Inflow=11.02 cfs 0.855 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=10.98 cfs 0.855 af

Reach 260: Avg. Flow Depth=0.60' Max Vel=13.77 fps Inflow=10.98 cfs 0.855 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=10.95 cfs 0.855 af

Reach 410: Avg. Flow Depth=0.54' Max Vel=3.63 fps Inflow=1.57 cfs 0.128 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=1.56 cfs 0.128 af

Reach 510: Avg. Flow Depth=0.35' Max Vel=18.27 fps Inflow=5.77 cfs 0.418 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=5.76 cfs 0.418 af

Reach 810: Avg. Flow Depth=0.19' Max Vel=13.33 fps Inflow=1.33 cfs 0.099 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=1.32 cfs 0.099 af

Reach 820: Avg. Flow Depth=0.22' Max Vel=10.22 fps Inflow=1.32 cfs 0.099 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=1.30 cfs 0.099 af

Pond 1P+G: R-Tank System w/Garage Peak Elev=52.94' Storage=9,376 cf Inflow=5.45 cfs 0.438 af
Outflow=2.03 cfs 0.353 af

Pond 2P: Peak Elev=107.31' Storage=4 cf Inflow=0.53 cfs 0.039 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=0.53 cfs 0.039 af

Pond 3P: Inflow=0.64 cfs 0.047 af
Primary=0.64 cfs 0.047 af

Pond 5P: Inflow=5.77 cfs 0.418 af
Primary=5.77 cfs 0.418 af

Pond 6P: Inflow=0.51 cfs 0.037 af
Primary=0.51 cfs 0.037 af

Pond 7P: Inflow=1.03 cfs 0.098 af
Primary=1.03 cfs 0.098 af

Pond 8P: Inflow=1.33 cfs 0.099 af
Primary=1.33 cfs 0.099 af

Pond 10P: Inflow=1.60 cfs 0.147 af
Primary=1.60 cfs 0.147 af

Pond 11P: Inflow=0.74 cfs 0.061 af
Primary=0.74 cfs 0.061 af

Pond 12P: Inflow=1.57 cfs 0.128 af
Primary=1.57 cfs 0.128 af

Pond 13.5P: CB 13796 Peak Elev=42.94' Inflow=1.83 cfs 0.099 af
Primary=1.83 cfs 0.099 af Secondary=0.00 cfs 0.000 af Outflow=1.83 cfs 0.099 af

Pond 13P: CB 13 Peak Elev=66.33' Inflow=1.94 cfs 0.143 af
Primary=1.37 cfs 0.137 af Secondary=0.56 cfs 0.006 af Outflow=1.94 cfs 0.143 af

Pond 14P: CB 13581 Peak Elev=42.66' Inflow=0.42 cfs 0.033 af
Primary=0.42 cfs 0.033 af Secondary=0.00 cfs 0.000 af Outflow=0.42 cfs 0.033 af

Pond CB-63: Peak Elev=60.68' Storage=11 cf Inflow=2.33 cfs 0.197 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=2.33 cfs 0.197 af

Pond DMH 20: DMH 13592 Peak Elev=38.44' Inflow=2.25 cfs 0.132 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=2.25 cfs 0.132 af

Pond DMH-7: Inflow=1.76 cfs 0.145 af
Primary=1.76 cfs 0.145 af

Pond DMH1: New DMH-1 Congress Street Peak Elev=46.54' Inflow=2.03 cfs 0.353 af
15.0" Round Culvert n=0.013 L=4.0' S=0.0050 '/' Outflow=2.03 cfs 0.353 af

Pond hil-01: Inflow=1.78 cfs 0.145 af
Primary=1.78 cfs 0.145 af

Pond hil-02: Inflow=10.98 cfs 0.855 af
Primary=10.98 cfs 0.855 af

Pond OS-1.: CB Peak Elev=55.22' Inflow=0.78 cfs 0.065 af
Primary=0.65 cfs 0.064 af Secondary=0.13 cfs 0.001 af Outflow=0.78 cfs 0.065 af

Pond OS-2.: CB 16258 Peak Elev=83.51' Inflow=2.34 cfs 0.194 af
Primary=2.28 cfs 0.194 af Secondary=0.06 cfs 0.000 af Outflow=2.34 cfs 0.194 af

Pond SMH-1: esmh-13952 Peak Elev=45.42' Inflow=2.99 cfs 0.490 af
18.0" Round Culvert n=0.012 L=41.0' S=0.0724 '/' Outflow=2.99 cfs 0.490 af

Pond SMH-13932: esmh-13932 Peak Elev=41.54' Inflow=3.59 cfs 0.554 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=3.59 cfs 0.554 af

Link SP-C1: Inflow=1.28 cfs 0.093 af
Primary=1.28 cfs 0.093 af

Link SP-C2: Inflow=3.59 cfs 0.554 af
Primary=3.59 cfs 0.554 af

Link SP-C3: Inflow=2.25 cfs 0.132 af
Primary=2.25 cfs 0.132 af

Link SP-C4: Inflow=13.78 cfs 1.089 af
Primary=13.78 cfs 1.089 af

Link SP-C5: Inflow=1.60 cfs 0.147 af
Primary=1.60 cfs 0.147 af

Total Runoff Area = 15.783 ac Runoff Volume = 2.296 af Average Runoff Depth = 1.75"
26.10% Pervious = 4.119 ac 73.90% Impervious = 11.664 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=2.72"
Flow Length=229' Tc=6.0 min CN=82 Runoff=1.40 cfs 0.101 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=2.54 cfs 0.211 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=2.72"
Flow Length=284' Tc=6.0 min CN=82 Runoff=1.00 cfs 0.072 af

Subcatchment2S: Runoff Area=16,157 sf 86.26% Impervious Runoff Depth=3.49"
Flow Length=244' Tc=6.0 min CN=90 Runoff=1.44 cfs 0.108 af

Subcatchment3.1: Runoff Area=10,051 sf 83.47% Impervious Runoff Depth=3.29"
Flow Length=250' Tc=6.0 min CN=88 Runoff=0.85 cfs 0.063 af

Subcatchment3.2: Runoff Area=4,089 sf 68.18% Impervious Runoff Depth=2.46"
Flow Length=66' Slope=0.0250 '/' Tc=6.0 min CN=79 Runoff=0.27 cfs 0.019 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=2.34 cfs 0.194 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=3.10"
Flow Length=510' Tc=6.0 min CN=86 Runoff=10.09 cfs 0.740 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=3.10"
Flow Length=121' Tc=6.0 min CN=86 Runoff=0.89 cfs 0.066 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=1.39"
Flow Length=634' Tc=6.0 min CN=65 Runoff=3.18 cfs 0.246 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=2.29"
Flow Length=399' Tc=6.0 min CN=77 Runoff=2.75 cfs 0.200 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=0.90"
Flow Length=326' Tc=6.0 min CN=57 Runoff=0.71 cfs 0.064 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.11 cfs 0.092 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=200' Tc=6.0 min CN=98 Runoff=2.34 cfs 0.194 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=3.49"
Flow Length=196' Tc=6.2 min CN=90 Runoff=3.19 cfs 0.241 af

Subcatchment14.1S: Runoff Area=22,477 sf 88.74% Impervious Runoff Depth=3.59"
Flow Length=325' Tc=6.0 min CN=91 Runoff=2.05 cfs 0.155 af

Subcatchment 15.1S: Runoff Area=18,644 sf 56.89% Impervious Runoff Depth=1.97"
Flow Length=383' Tc=6.0 min CN=73 Runoff=0.96 cfs 0.070 af

Subcatchment 17.1A: NEW Building Roof Runoff Area=43,616 sf 100.00% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=98 Runoff=4.40 cfs 0.364 af

Subcatchment 17.1B: Green Roof Runoff Area=14,879 sf 19.06% Impervious Runoff Depth=3.29"
Flow Length=188' Tc=6.0 min CN=88 Runoff=1.26 cfs 0.094 af

Subcatchment 18S: Visitor Garage Runoff Area=26,386 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=264' Tc=6.0 min CN=98 Runoff=2.66 cfs 0.220 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=3.39"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=1.31 cfs 0.110 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=3.39"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=3.92 cfs 0.330 af

Reach 2R: Weymouth Street Sewer Inflow=2.95 cfs 0.318 af
Outflow=2.95 cfs 0.318 af

Reach 3R: Offsite Forest Street Inflow=0.46 cfs 0.008 af
Outflow=0.46 cfs 0.008 af

Reach 15R: Inflow=1.22 cfs 0.011 af
Outflow=1.22 cfs 0.011 af

Reach 110: Avg. Flow Depth=0.47' Max Vel=4.21 fps Inflow=1.11 cfs 0.092 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=1.11 cfs 0.092 af

Reach 115: Avg. Flow Depth=0.86' Max Vel=5.61 fps Inflow=5.06 cfs 0.411 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=5.03 cfs 0.411 af

Reach 118: Avg. Flow Depth=0.61' Max Vel=10.83 fps Inflow=7.35 cfs 0.605 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=7.31 cfs 0.605 af

Reach 125: Avg. Flow Depth=0.47' Max Vel=6.45 fps Inflow=2.34 cfs 0.194 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=2.33 cfs 0.194 af

Reach 128: Avg. Flow Depth=0.72' Max Vel=3.83 fps Inflow=2.33 cfs 0.194 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=2.30 cfs 0.194 af

Reach 135: Avg. Flow Depth=0.33' Max Vel=10.15 fps Inflow=1.73 cfs 0.219 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=1.72 cfs 0.219 af

Reach 181: Avg. Flow Depth=0.80' Max Vel=3.96 fps Inflow=2.66 cfs 0.220 af
12.0" Round Pipe n=0.012 L=60.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=2.64 cfs 0.220 af

Reach 210: Avg. Flow Depth=0.48' Max Vel=6.82 fps Inflow=2.54 cfs 0.211 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=2.53 cfs 0.211 af

Reach 215: Avg. Flow Depth=0.49' Max Vel=3.75 fps Inflow=1.44 cfs 0.108 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=1.43 cfs 0.108 af

Reach 216R: Avg. Flow Depth=0.41' Max Vel=19.62 fps Inflow=5.88 cfs 0.446 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=5.87 cfs 0.446 af

Reach 220: Avg. Flow Depth=0.66' Max Vel=9.78 fps Inflow=7.31 cfs 0.605 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=7.19 cfs 0.605 af

Reach 230: Avg. Flow Depth=0.42' Max Vel=20.75 fps Inflow=8.29 cfs 0.687 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=8.26 cfs 0.687 af

Reach 231: Inflow=0.85 cfs 0.063 af
Outflow=0.85 cfs 0.063 af

Reach 240: Avg. Flow Depth=0.66' Max Vel=24.42 fps Inflow=18.27 cfs 1.428 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=18.22 cfs 1.428 af

Reach 260: Avg. Flow Depth=0.79' Max Vel=15.85 fps Inflow=18.22 cfs 1.428 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=18.19 cfs 1.428 af

Reach 410: Avg. Flow Depth=0.71' Max Vel=3.95 fps Inflow=2.34 cfs 0.194 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=2.33 cfs 0.194 af

Reach 510: Avg. Flow Depth=0.47' Max Vel=21.44 fps Inflow=10.09 cfs 0.740 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=10.08 cfs 0.740 af

Reach 810: Avg. Flow Depth=0.27' Max Vel=16.46 fps Inflow=2.75 cfs 0.200 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=2.73 cfs 0.200 af

Reach 820: Avg. Flow Depth=0.32' Max Vel=12.61 fps Inflow=2.73 cfs 0.200 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=2.70 cfs 0.200 af

Pond 1P+G: R-Tank System w/Garage Peak Elev=53.90' Storage=11,657 cf Inflow=8.29 cfs 0.678 af
Outflow=4.42 cfs 0.592 af

Pond 2P: Peak Elev=107.44' Storage=6 cf Inflow=1.00 cfs 0.072 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=1.00 cfs 0.072 af

Pond 3P: Inflow=1.12 cfs 0.083 af
Primary=1.12 cfs 0.083 af

Pond 5P: Inflow=10.09 cfs 0.740 af
Primary=10.09 cfs 0.740 af

Pond 6P: Inflow=0.89 cfs 0.066 af
Primary=0.89 cfs 0.066 af

Pond 7P: Inflow=3.18 cfs 0.246 af
Primary=3.18 cfs 0.246 af

Pond 8P: Inflow=2.75 cfs 0.200 af
Primary=2.75 cfs 0.200 af

Pond 10P: Inflow=3.01 cfs 0.258 af
Primary=3.01 cfs 0.258 af

Pond 11P: Inflow=1.11 cfs 0.092 af
Primary=1.11 cfs 0.092 af

Pond 12P: Inflow=2.34 cfs 0.194 af
Primary=2.34 cfs 0.194 af

Pond 13.5P: CB 13796 Peak Elev=43.13' Inflow=4.31 cfs 0.189 af
Primary=3.09 cfs 0.178 af Secondary=1.22 cfs 0.011 af Outflow=4.31 cfs 0.189 af

Pond 13P: CB 13 Peak Elev=66.52' Inflow=4.01 cfs 0.253 af
Primary=1.73 cfs 0.219 af Secondary=2.29 cfs 0.034 af Outflow=4.01 cfs 0.253 af

Pond 14P: CB 13581 Peak Elev=42.78' Inflow=0.96 cfs 0.070 af
Primary=0.96 cfs 0.070 af Secondary=0.00 cfs 0.000 af Outflow=0.96 cfs 0.070 af

Pond CB-63: Peak Elev=62.71' Storage=38 cf Inflow=5.88 cfs 0.446 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=5.88 cfs 0.446 af

Pond DMH 20: DMH 13592 Peak Elev=39.23' Inflow=4.05 cfs 0.249 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=4.05 cfs 0.249 af

Pond DMH-7: Inflow=2.64 cfs 0.220 af
Primary=2.64 cfs 0.220 af

Pond DMH1: New DMH-1 Congress Street Peak Elev=47.09' Inflow=4.42 cfs 0.592 af
15.0" Round Culvert n=0.013 L=4.0' S=0.0050 '/' Outflow=4.42 cfs 0.592 af

Pond hil-01: Inflow=2.66 cfs 0.220 af
Primary=2.66 cfs 0.220 af

Pond hil-02: Inflow=18.22 cfs 1.428 af
Primary=18.22 cfs 1.428 af

Pond OS-1.: CB Peak Elev=55.26' Inflow=1.31 cfs 0.110 af
Primary=0.85 cfs 0.102 af Secondary=0.46 cfs 0.008 af Outflow=1.31 cfs 0.110 af

Pond OS-2.: CB 16258 Peak Elev=83.61' Inflow=3.92 cfs 0.330 af
Primary=2.95 cfs 0.318 af Secondary=0.97 cfs 0.013 af Outflow=3.92 cfs 0.330 af

Pond SMH-1: esmh-13952 Peak Elev=45.85' Inflow=5.94 cfs 0.811 af
18.0" Round Culvert n=0.012 L=41.0' S=0.0724 '/' Outflow=5.94 cfs 0.811 af

Pond SMH-13932: esmh-13932 Peak Elev=42.01' Inflow=6.73 cfs 0.913 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=6.73 cfs 0.913 af

Link SP-C1: Inflow=2.39 cfs 0.174 af
Primary=2.39 cfs 0.174 af

Link SP-C2: Inflow=6.73 cfs 0.913 af
Primary=6.73 cfs 0.913 af

Link SP-C3: Inflow=4.05 cfs 0.249 af
Primary=4.05 cfs 0.249 af

Link SP-C4: Inflow=24.94 cfs 1.939 af
Primary=24.94 cfs 1.939 af

Link SP-C5: Inflow=3.01 cfs 0.258 af
Primary=3.01 cfs 0.258 af

Total Runoff Area = 15.783 ac Runoff Volume = 3.955 af Average Runoff Depth = 3.01"
26.10% Pervious = 4.119 ac 73.90% Impervious = 11.664 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Runoff Area=19,446 sf 73.39% Impervious Runoff Depth=3.80"
Flow Length=229' Tc=6.0 min CN=82 Runoff=1.93 cfs 0.141 af

Subcatchment2A: Runoff Area=25,217 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=142' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=3.21 cfs 0.268 af

Subcatchment2B: Runoff Area=13,868 sf 73.07% Impervious Runoff Depth=3.80"
Flow Length=284' Tc=6.0 min CN=82 Runoff=1.38 cfs 0.101 af

Subcatchment2S: Runoff Area=16,157 sf 86.26% Impervious Runoff Depth=4.65"
Flow Length=244' Tc=6.0 min CN=90 Runoff=1.89 cfs 0.144 af

Subcatchment3.1: Runoff Area=10,051 sf 83.47% Impervious Runoff Depth=4.43"
Flow Length=250' Tc=6.0 min CN=88 Runoff=1.14 cfs 0.085 af

Subcatchment3.2: Runoff Area=4,089 sf 68.18% Impervious Runoff Depth=3.50"
Flow Length=66' Slope=0.0250 '/' Tc=6.0 min CN=79 Runoff=0.38 cfs 0.027 af

Subcatchment4S: Runoff Area=23,249 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=160' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=2.96 cfs 0.247 af

Subcatchment5S: Runoff Area=125,028 sf 78.87% Impervious Runoff Depth=4.22"
Flow Length=510' Tc=6.0 min CN=86 Runoff=13.59 cfs 1.009 af

Subcatchment6S: Runoff Area=11,085 sf 79.41% Impervious Runoff Depth=4.22"
Flow Length=121' Tc=6.0 min CN=86 Runoff=1.20 cfs 0.089 af

Subcatchment7S: Runoff Area=92,296 sf 39.10% Impervious Runoff Depth=2.21"
Flow Length=634' Tc=6.0 min CN=65 Runoff=5.25 cfs 0.390 af

Subcatchment8S: Runoff Area=45,533 sf 63.76% Impervious Runoff Depth=3.31"
Flow Length=399' Tc=6.0 min CN=77 Runoff=3.97 cfs 0.288 af

Subcatchment10S: Runoff Area=37,247 sf 30.36% Impervious Runoff Depth=1.56"
Flow Length=326' Tc=6.0 min CN=57 Runoff=1.39 cfs 0.111 af

Subcatchment11S: Runoff Area=11,050 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=90' Slope=0.0050 '/' Tc=6.0 min CN=98 Runoff=1.41 cfs 0.118 af

Subcatchment12S: Runoff Area=23,268 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=200' Tc=6.0 min CN=98 Runoff=2.96 cfs 0.248 af

Subcatchment13S: Runoff Area=36,014 sf 85.62% Impervious Runoff Depth=4.65"
Flow Length=196' Tc=6.2 min CN=90 Runoff=4.19 cfs 0.320 af

Subcatchment14.1S: Runoff Area=22,477 sf 88.74% Impervious Runoff Depth=4.76"
Flow Length=325' Tc=6.0 min CN=91 Runoff=2.67 cfs 0.205 af

Subcatchment 15.1S: Runoff Area=18,644 sf 56.89% Impervious Runoff Depth=2.92"
Flow Length=383' Tc=6.0 min CN=73 Runoff=1.44 cfs 0.104 af

Subcatchment 17.1A: NEW Building Roof Runoff Area=43,616 sf 100.00% Impervious Runoff Depth=5.56"
Tc=6.0 min CN=98 Runoff=5.56 cfs 0.464 af

Subcatchment 17.1B: Green Roof Runoff Area=14,879 sf 19.06% Impervious Runoff Depth=4.43"
Flow Length=188' Tc=6.0 min CN=88 Runoff=1.68 cfs 0.126 af

Subcatchment 18S: Visitor Garage Runoff Area=26,386 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=264' Tc=6.0 min CN=98 Runoff=3.36 cfs 0.281 af

Subcatchment OS-1: OS-1 Runoff Area=17,031 sf 85.00% Impervious Runoff Depth=4.54"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=1.73 cfs 0.148 af

Subcatchment OS-2: OS-2 Runoff Area=50,885 sf 85.00% Impervious Runoff Depth=4.54"
Flow Length=1,300' Tc=10.0 min CN=89 Runoff=5.17 cfs 0.442 af

Reach 2R: Weymouth Street Sewer Inflow=3.31 cfs 0.412 af
Outflow=3.31 cfs 0.412 af

Reach 3R: Offsite Forest Street Inflow=0.73 cfs 0.016 af
Outflow=0.73 cfs 0.016 af

Reach 15R: Inflow=2.76 cfs 0.033 af
Outflow=2.76 cfs 0.033 af

Reach 110: Avg. Flow Depth=0.61' Max Vel=4.27 fps Inflow=1.41 cfs 0.118 af
8.0" Round Pipe n=0.012 L=51.0' S=0.0100 '/' Capacity=1.31 cfs Outflow=1.39 cfs 0.118 af

Reach 115: Avg. Flow Depth=1.09' Max Vel=5.70 fps Inflow=6.47 cfs 0.530 af
15.0" Round Pipe n=0.012 L=67.0' S=0.0078 '/' Capacity=6.17 cfs Outflow=6.41 cfs 0.530 af

Reach 118: Avg. Flow Depth=0.70' Max Vel=11.53 fps Inflow=9.35 cfs 0.777 af
18.0" Round Pipe n=0.012 L=90.0' S=0.0340 '/' Capacity=20.98 cfs Outflow=9.30 cfs 0.777 af

Reach 125: Avg. Flow Depth=0.54' Max Vel=6.84 fps Inflow=2.96 cfs 0.248 af
12.0" Round Pipe n=0.012 L=79.0' S=0.0182 '/' Capacity=5.21 cfs Outflow=2.95 cfs 0.248 af

Reach 128: Avg. Flow Depth=1.00' Max Vel=3.87 fps Inflow=2.95 cfs 0.248 af
12.0" Round Pipe n=0.012 L=71.0' S=0.0048 '/' Capacity=2.67 cfs Outflow=2.79 cfs 0.248 af

Reach 135: Avg. Flow Depth=0.35' Max Vel=10.44 fps Inflow=1.94 cfs 0.280 af
8.0" Round Pipe n=0.012 L=225.0' S=0.0747 '/' Capacity=3.58 cfs Outflow=1.93 cfs 0.280 af

Reach 181: Avg. Flow Depth=1.00' Max Vel=3.94 fps Inflow=3.36 cfs 0.281 af
12.0" Round Pipe n=0.012 L=60.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=2.94 cfs 0.281 af

Reach 210: Avg. Flow Depth=0.55' Max Vel=7.22 fps Inflow=3.21 cfs 0.268 af
12.0" Round Pipe n=0.012 L=66.0' S=0.0200 '/' Capacity=5.46 cfs Outflow=3.20 cfs 0.268 af

Reach 215: Avg. Flow Depth=0.58' Max Vel=4.00 fps Inflow=1.89 cfs 0.144 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0069 '/' Capacity=2.96 cfs Outflow=1.88 cfs 0.144 af

Reach 216R: Avg. Flow Depth=0.52' Max Vel=22.00 fps Inflow=9.15 cfs 0.678 af
12.0" Round Pipe n=0.013 L=12.0' S=0.2267 '/' Capacity=16.96 cfs Outflow=9.15 cfs 0.678 af

Reach 220: Avg. Flow Depth=0.76' Max Vel=10.40 fps Inflow=9.30 cfs 0.777 af
18.0" Round Pipe n=0.012 L=218.0' S=0.0259 '/' Capacity=18.30 cfs Outflow=9.15 cfs 0.777 af

Reach 230: Avg. Flow Depth=0.47' Max Vel=22.28 fps Inflow=10.64 cfs 0.890 af
18.0" Round Pipe n=0.012 L=87.0' S=0.1884 '/' Capacity=49.39 cfs Outflow=10.61 cfs 0.890 af

Reach 231: Inflow=1.14 cfs 0.085 af
Outflow=1.14 cfs 0.085 af

Reach 240: Avg. Flow Depth=0.77' Max Vel=26.20 fps Inflow=24.09 cfs 1.899 af
18.0" Round Pipe n=0.012 L=100.0' S=0.1612 '/' Capacity=45.69 cfs Outflow=24.04 cfs 1.899 af

Reach 260: Avg. Flow Depth=0.92' Max Vel=17.05 fps Inflow=24.04 cfs 1.899 af
24.0" Round Pipe n=0.012 L=48.0' S=0.0515 '/' Capacity=55.59 cfs Outflow=23.99 cfs 1.899 af

Reach 410: Avg. Flow Depth=0.90' Max Vel=4.02 fps Inflow=2.96 cfs 0.247 af
12.0" Round Pipe n=0.012 L=35.0' S=0.0051 '/' Capacity=2.77 cfs Outflow=2.94 cfs 0.247 af

Reach 510: Avg. Flow Depth=0.55' Max Vel=23.28 fps Inflow=13.59 cfs 1.009 af
18.0" Round Pipe n=0.012 L=62.0' S=0.1768 '/' Capacity=47.85 cfs Outflow=13.57 cfs 1.009 af

Reach 810: Avg. Flow Depth=0.32' Max Vel=18.26 fps Inflow=3.97 cfs 0.288 af
12.0" Round Pipe n=0.012 L=210.0' S=0.2129 '/' Capacity=17.81 cfs Outflow=3.94 cfs 0.288 af

Reach 820: Avg. Flow Depth=0.39' Max Vel=13.96 fps Inflow=3.94 cfs 0.288 af
12.0" Round Pipe n=0.012 L=164.0' S=0.1020 '/' Capacity=12.32 cfs Outflow=3.91 cfs 0.288 af

Pond 1P+G: R-Tank System w/Garage Peak Elev=54.25' Storage=12,492 cf Inflow=9.96 cfs 0.871 af
Outflow=8.08 cfs 0.785 af

Pond 2P: Peak Elev=107.53' Storage=7 cf Inflow=1.38 cfs 0.101 af
18.0" Round Culvert n=0.011 L=50.0' S=0.0100 '/' Outflow=1.38 cfs 0.101 af

Pond 3P: Inflow=1.51 cfs 0.113 af
Primary=1.51 cfs 0.113 af

Pond 5P: Inflow=13.59 cfs 1.009 af
Primary=13.59 cfs 1.009 af

Pond 6P: Inflow=1.20 cfs 0.089 af
Primary=1.20 cfs 0.089 af

Pond 7P: Inflow=5.25 cfs 0.390 af
Primary=5.25 cfs 0.390 af

Pond 8P: Inflow=3.97 cfs 0.288 af
Primary=3.97 cfs 0.288 af

Pond 10P: Inflow=4.07 cfs 0.358 af
Primary=4.07 cfs 0.358 af

Pond 11P: Inflow=1.41 cfs 0.118 af
Primary=1.41 cfs 0.118 af

Pond 12P: Inflow=2.96 cfs 0.248 af
Primary=2.96 cfs 0.248 af

Pond 13.5P: CB 13796 Peak Elev=43.23' Inflow=6.54 cfs 0.276 af
Primary=3.78 cfs 0.243 af Secondary=2.76 cfs 0.033 af Outflow=6.54 cfs 0.276 af

Pond 13P: CB 13 Peak Elev=66.65' Inflow=5.84 cfs 0.351 af
Primary=1.94 cfs 0.280 af Secondary=3.91 cfs 0.071 af Outflow=5.84 cfs 0.351 af

Pond 14P: CB 13581 Peak Elev=42.87' Inflow=1.44 cfs 0.104 af
Primary=1.44 cfs 0.104 af Secondary=0.00 cfs 0.000 af Outflow=1.44 cfs 0.104 af

Pond CB-63: Peak Elev=66.15' Storage=81 cf Inflow=9.16 cfs 0.678 af
12.0" Round Culvert n=0.012 L=10.0' S=0.1340 '/' Outflow=9.15 cfs 0.678 af

Pond DMH 20: DMH 13592 Peak Elev=39.99' Inflow=5.21 cfs 0.347 af
12.0" Round Culvert n=0.010 L=20.0' S=0.1295 '/' Outflow=5.21 cfs 0.347 af

Pond DMH-7: Inflow=2.94 cfs 0.281 af
Primary=2.94 cfs 0.281 af

Pond DMH1: New DMH-1 Congress Street Peak Elev=48.09' Inflow=8.08 cfs 0.785 af
15.0" Round Culvert n=0.013 L=4.0' S=0.0050 '/' Outflow=8.08 cfs 0.785 af

Pond hil-01: Inflow=3.36 cfs 0.281 af
Primary=3.36 cfs 0.281 af

Pond hil-02: Inflow=24.04 cfs 1.899 af
Primary=24.04 cfs 1.899 af

Pond OS-1.: CB Peak Elev=55.29' Inflow=1.73 cfs 0.148 af
Primary=1.00 cfs 0.132 af Secondary=0.73 cfs 0.016 af Outflow=1.73 cfs 0.148 af

Pond OS-2.: CB 16258 Peak Elev=83.68' Inflow=5.17 cfs 0.442 af
Primary=3.31 cfs 0.412 af Secondary=1.86 cfs 0.030 af Outflow=5.17 cfs 0.442 af

Pond SMH-1: esmh-13952 Peak Elev=46.71' Inflow=9.92 cfs 1.065 af
18.0" Round Culvert n=0.012 L=41.0' S=0.0724 '/' Outflow=9.92 cfs 1.065 af

Pond SMH-13932: esmh-13932 Peak Elev=43.02' Inflow=10.90 cfs 1.197 af
18.0" Round Culvert n=0.025 L=45.0' S=0.0587 '/' Outflow=10.90 cfs 1.197 af

Link SP-C1: Inflow=3.31 cfs 0.242 af
Primary=3.31 cfs 0.242 af

Link SP-C2: Inflow=10.90 cfs 1.197 af
Primary=10.90 cfs 1.197 af

Link SP-C3: Inflow=5.21 cfs 0.347 af
Primary=5.21 cfs 0.347 af

Link SP-C4: Inflow=34.33 cfs 2.666 af
Primary=34.33 cfs 2.666 af

Link SP-C5: Inflow=4.07 cfs 0.358 af
Primary=4.07 cfs 0.358 af

Total Runoff Area = 15.783 ac Runoff Volume = 5.358 af Average Runoff Depth = 4.07"
26.10% Pervious = 4.119 ac 73.90% Impervious = 11.664 ac

Attachment C

INSPECTION, MAINTENANCE, AND HOUSEKEEPING

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

Maine Medical Center
Portland, ME

Introduction

The owner of the development is Maine Medical Center. The owner's address is 22 Bramhall Street, Portland, Maine 04102. The owner of the proposed project will be responsible for the maintenance of all stormwater management structures, the establishment of any contract services required to implement the program, and the keeping of records and maintenance logbook. The owner will assure that the following maintenance program will be adhered.

Records of all inspections and maintenance work accomplished must be kept on file and retained for a minimum 5-year time span. The maintenance logbook will be made available to the Maine Department of Environmental Protection (MDEP) and the City of Portland upon request. At a minimum, the appropriate and relevant activities for each of the stormwater management systems will be performed on the prescribed schedule.

The following plan outlines the anticipated inspection, maintenance, and housekeeping procedures for the erosion and sedimentation controls as well as stormwater management devices for the project site. Also, this plan outlines several housekeeping requirements that shall be followed during and after construction. These procedures should be followed in order to ensure the intended function of the designed measures and to prevent unreasonable adverse impacts to the surrounding environment.

The procedures outlined in the Inspection, Maintenance, and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional details on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the MDEP.

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within seven (7) calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken.

   The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three (3) years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

   A. <u>Sediment Barriers:</u>

   - Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
   - If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
   - Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
   - Filter berms shall be reshaped as needed.
   - Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

   B. <u>Riprap Materials:</u>

   - Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

C. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to this plan.

D. Temporary Storm Drain Inlet Protection:

- The inlet protection structure shall be inspected before each rain event and repaired as necessary.
- Sediment shall be removed and the storm drain sediment barrier restored to its original dimensions when the sediment has accumulated to half of the design depth of the trap.
- Structures shall be removed upon permanent stabilization of the tributary area.
- Upon removal of the structure, all accumulated sediments downstream of the structure shall be cleaned from the storm drain system.

E. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

F. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

   A. Spill Prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

   B. Groundwater Protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

   C. Fugitive Sediment and Dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

   D. Debris and Other Materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

   E. Trench or Foundation Dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

After Construction

1. **Inspection:** After construction, the owner or operator shall hire a qualified post-construction stormwater inspector to at least annually, inspect the BMPs, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.

2. **Maintenance, and repair:** If a BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator shall take corrective actions to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective actions to the Department of Public Works (DPW). The following is a list of permanent erosion control and stormwater management measures and the inspection, maintenance, and housekeeping tasks to be performed after construction.

A. Vegetated Areas:

- Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
- Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

B. Winter Sanding:

- Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring.
- Accumulations on pavement may be removed by pavement sweeping.
- Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

C. Catch Basins:

- Inspect and, if required, clean-out catch basins at least once a year, preferably in early spring.
- Clean out must include the removal and legal disposal of accumulated sediments and debris at the bottom of the basin, at any inlet grates, at any inflow channels to the basin, and at any pipes between basins.

D. ACF R-Tank System:

- Refer to R-Tank – Operation, Inspection & Maintenance manual for guidance on required maintenance and inspection.

E. Cultec Stormwater Chamber System:

- Refer to Cultec – Operation & Maintenance Guidelines for guidance on required maintenance and inspection.

3. **Annual Report:** The owner or operator or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification that the person has inspected the BMPs and that they are adequately maintained

and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective actions taken.

4. **Duration of Maintenance:** Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments

Attachment 1 – Sample Stormwater Inspection and Maintenance Form

Attachment 1 - Sample Stormwater Inspection and Maintenance Form

Maine Medical Center
Portland, ME

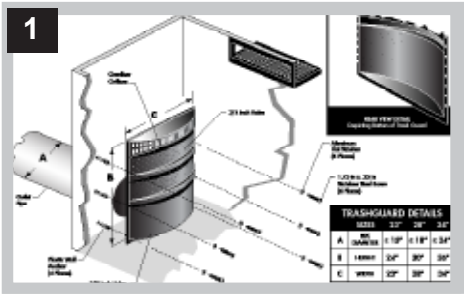
This log is intended to accompany the stormwater Inspection, Maintenance and Housekeeping Plan for Maine Medical Center. The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five (5) years and shall be available for review. Qualified personnel familiar with drainage systems and soils shall perform all inspections. Attached is a copy of the construction and post-construction maintenance logs.

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
Ditches and Swales	Inspect after major rainfall event producing greater than 3" of rain in 2 hours.			
	Repair erosion or damage immediately.			
Catch Basins	Remove accumulated sediment and debris			
	Sump depth			
Vegetated Areas	Inspect Slopes			
	Replant Bare Areas			
	Check after Major Storms			
Winter Sanding	Clean annually (Spring)			
	Remove sand and sediment from roadway shoulders			
ACF R-Tanks	Inspect quarterly through first year of use, with yearly inspections thereafter			
Cultec Stormwater Chambers	Inspect monthly in first year, with yearly inspections thereafter and every third year following			

R-TANK MAINTENANCE

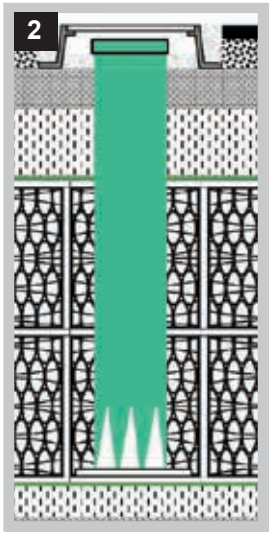
With adequate pre-treatment of stormwater before it enters the ACF R-Tank, heavy sediments, trash, and other debris will not enter the system. Systems like the TrashGuard (see image 1) are simple and inexpensive, but also highly effective. Therefore, most maintenance efforts should be directed at the pre-treatment structures to ensure they are functioning properly.

To monitor the accumulation of fine sediments that may enter the detention/ retention area, ACF R-Tank systems should include maintanance ports.



Maintenance

Running from the bottom of the ACF R-Tank up to ground level, Maintenance Ports are made from solid PVC Pipe with notches cut into the bottom. As water is pumped into the port the notches will direct water throughout the bottom of the system to create turbulence, thereby re-suspending accumulated sediments.



After pumping water into the tanks, flushing is completed by vacuuming sediment laden water out of the system either through the outlet structure or through the flush port.

The diameter of the flush port is determined by a number of factors including the rate at which water will be pumped into the system, the number of flush ports incorporated, and the possible requirement of vacuuming through the port. Experience has shown that a 12” port is more than adequate for virtually any required use, with 6” ports more common when vacuuming will be performed at the outlet structure.



Installing the Maintenance System

To install the PCV Pipe, remove the center small plate and cut the top large plate between the remaining interior small plates. Before inserting the port into the Tank, install an anti-scour plate in the bottom of the Tank to prevent disturbance of the base materials.

Maintenance ports should be capped at the surface. In landscaped areas, this may be accomplished with a simple pipe cap or plastic valve box (see image 4 lower inset). In paved areas, metal lids are more appropriate (see image 4).



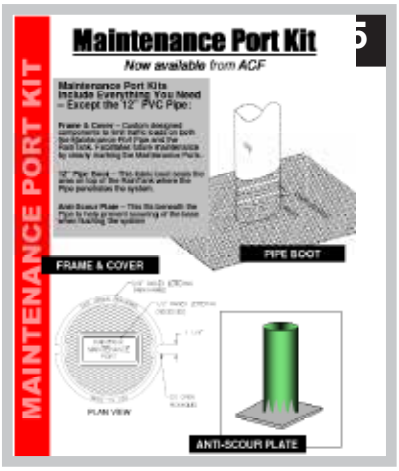
R-TANK MAINTENANCE

Maintenance Intervals

Maintenance Schedules for the ACF R-Tank System are a function of the contributing area and the type of pre-treatment specified. A standard maintenance schedule may include quarterly inspections through the first year of use, with yearly inspections thereafter. Flushing should be performed if sediment should the lesser of 6" or 15% of the system height.

Availability

All system components, including caps, lids, anti-scour plates, frames and covers are available from ACF. In fact, we've created Maintenance Port Kids (see image 5) that include everything needed except for the pipe itself. Contact your local sales representative or our Sales Office at 800-448-3636 for assistance.



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R-TANK OPERATION, INSPECTION & MAINTENANCE

Operation

Your ACF R-Tank System has been designed to function in conjunction with the engineered drainage system on your site, the existing municipal infrastructure, and/or the existing soils and geography of the receiving watershed. Unless your site included certain unique and rare features, the operation of your R-Tank System will be driven by naturally occurring systems and will function autonomously. However, upholding a proper schedule of Inspection & Maintenance is critical to ensuring continued functionality and optimum performance of the system.

Inspection

Both the R-Tank and all stormwater pre-treatment features incorporated into your site must be inspected regularly. Inspection frequency for your system must be determined based on the contributing drainage area, but should never exceed one year between inspections (six months during the first year of operation).

Inspections may be required more frequently for pre-treatment systems. You should refer to the manufacturer requirements for the proper inspection schedule.

With the right equipment your inspection and measurements can be accomplished from the surface without physically entering any confined spaces. If your inspection does require confined space entry, you MUST follow all local/regional requirements as well as OSHA standards.

R-Tank Systems may incorporate Inspection Ports, Maintenance Ports, and/or adjoining manholes. Each of these features are easily accessed by removing the lid at the surface. With the cover removed, a visual inspection can be performed to identify sediment deposits within the structure. Using a flashlight, ALL access points should be examined to complete a thorough inspection.

Inspection Ports
Usually located centrally in the R-Tank System, these perforated columns are designed to give the user a base-line sediment depth across the system floor.

Maintenance Ports
Usually located near the inlet and outlet connections, you'll likely find deeper deposits of heavier sediments when compared to the Inspection Ports.

Manholes
Most systems will include at least two manholes - one at the inlet and another at the outlet. There may be more than one location where stormwater enters the system, which would result in additional manholes to inspect.

Bear in mind that these manholes often include a sump below the invert of the pipe connecting to the R-Tank. These sumps are designed to capture sediment before it reaches the R-Tank, and they should be kept clean to ensure they function properly. However, existence of sediment in the sump does NOT necessarily mean sediment has accumulated in the R-Tank.

After inspecting the bottom of the structure, use a mirror on a pole (or some other device) to check for sediment or debris in the pipe connecting to the R-Tank.

R-TANK OPERATION INSPECTION & MAINTENANCE

If sediment or debris is observed in any of these structures, you should determine the depth of the material. This is typically accomplished with a stadia rod, but you should determine the best way to obtain the measurement.

All observations and measurements should be recorded on an Inspection Log kept on file. We've included a form you can use at the end of this guideline.

Maintenance

The R-Tank System should be back-flushed once sediment accumulation has reached 6" or 15% of the total system height. Use the chart below as a guideline to determine the point at which maintenance is required on your system.

R-Tank Unit	Height	Max Sediment Dept
Mini	9.5"	1.5"
Single	17"	3"
Double	34"	5"
Triple	50"	6"
Quad	67"	6"
Pent	84"	6"

Before any maintenance is performed on your system, be sure to plug the outlet pipe to prevent contamination of the adjacent systems.

To back-flush the R-Tank, water is pumped into the system through the Maintenance Ports as rapidly as possible. Water should be pumped into ALL Maintenance Ports. The turbulent action of the water moving through the R-Tank will suspend sediments which may then be pumped out.

If your system includes an Outlet Structure, this will be the ideal location to pump contaminated water out of the system. However, removal of back-flush water may be accomplished through the Maintenance Ports, as well.

For systems with large footprints that would require extensive volumes of water to properly flush the system, you should consider performing your maintenance within 24 hours of a rain event. Stormwater entering the system will aid in the suspension of sediments and reduce the volume of water required to properly flush the system.

Once removed, sediment-laden water may be captured for disposal or pumped through a Dirtbag™ (if permitted by the locality).

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Step-By-Step Inspection & Maintenance Routine

1) **Inspection**
    a. Inspection Port
        i. Remove Cap
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod
        iv. Record results on Maintenance Log
        v. Replace Cap
    b. Maintenance Port/s
        i. Remove Cap
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod
        iv. Record results on Maintenance Log
        v. Replace Cap
        vi. Repeat for ALL Maintenance Ports
    c. Adjacent Manholes
        i. Remove Cover
        ii. Use flashlight to detect sediment deposits
        iii. If present, measure sediment depth with stadia rod, accounting for depth of sump (if present)
        iv. Inspect pipes connecting to R-Tank
        v. Record results on Maintenance Log
        vi. Replace Cover
        vii. Repeat for ALL Manholes that connect to the R-Tank

2) **Maintenance**
    a. Plug system outlet to prevent discharge of back-flush water
    b. Determine best location to pump out back-flush water
    c. Remove Cap from Maintenance Port
    d. Pump water as rapidly as possible (without over-topping port) into system until at least 1”
    of water covers system bottom
    e. Replace Cap
    f. Repeat at ALL Maintenance Ports
    g. Pump out back-flush water to complete back-flushing
    h. Vacuum all adjacent structures and any other structures or stormwater pre-treatment systems that require attention
    i. Sediment-laden water may be captured for disposal or pumped through a Dirtbag™.
    j. Replace any remaining Caps or Covers
    k. Record the back-flushing event in your Maintenance Log with any relevant specifics

R-Tank Maintenance Log

Site Name:_____

Location:_____

System Owner:_____

Company Responsible for Maintenance:_____

Contact:_____

Phone Numer:_____

Date	Location	Depth to Bottom	Depth to Sediment	Sediment Depth	Observations/Notes	Initials

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Doc ID: CULG008 05-17
May 2017

These instructions are for single-layer traffic applications only. For multi-layer applications, contact CULTEC.
All illustrations and photos shown herein are examples of typical situations. Be sure to follow the engineer's drawings.
Actual designs may vary.

This manual contains guidelines recommended by CULTEC, Inc. and may be used in conjunction with, but not to supersede, local regulations or regulatory authorities. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Introduction

The CULTEC Subsurface Stormwater Management System is a high-density polyethylene (HDPE) chamber system arranged in parallel rows surrounded by washed stone. The CULTEC chambers create arch-shaped voids within the washed stone to provide stormwater detention, retention, infiltration, and reclamation. Filter fabric is placed between the native soil and stone interface to prevent the intrusion of fines into the system. In order to minimize the amount of sediment which may enter the CULTEC system, a sediment collection device (stormwater pretreatment device) is recommended upstream from the CULTEC chamber system. Examples of pretreatment devices include, but are not limited to, an appropriately sized catch basin with sump, pretreatment catchment device, oil grit separator, or baffled distribution box. Manufactured pretreatment devices may also be used in accordance with CULTEC chambers. Installation, operation, and maintenance of these devices shall be in accordance with manufacturer's recommendations. Almost all of the sediment entering the stormwater management system will be collected within the pretreatment device.

Best Management Practices allow for the maintenance of the preliminary collection systems prior to feeding the CULTEC chambers. The pretreatment structures shall be inspected for any debris that will restrict inlet flow rates. Outfall structures, if any, such as outlet control must also be inspected for any obstructions that would restrict outlet flow rates. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Operation and Maintenance Requirements

I. Operation

CULTEC stormwater management systems shall be operated to receive only stormwater run-off in accordance with applicable local regulations. CULTEC subsurface stormwater management chambers operate at peak performance when installed in series with pretreatment. Pretreatment of suspended solids is superior to treatment of solids once they have been introduced into the system. The use of pretreatment is adequate as long as the structure is maintained and the site remains stable with finished impervious surfaces such as parking lots, walkways, and pervious areas are properly maintained. If there is to be an unstable condition, such as improvements to buildings or parking areas, all proper silt control measures shall be implemented according to local regulations.

II. Inspection and Maintenance Options

A. The CULTEC system may be equipped with an inspection port located on the inlet row. The inspection port is a circular cast box placed in a rectangular concrete collar. When the lid is removed, a 6-inch (150 mm) pipe with a screw-in plug will be exposed. Remove the plug. This will provide access to the CULTEC Chamber row below. From the surface, through this access, the sediment may be measured at this location. A stadia rod may be used to measure the depth of sediment if any in this row. If the depth of sediment is in excess of 3 inches (76 mm), then this row should be cleaned with high pressure water through a culvert cleaning nozzle. This would be carried out through an upstream manhole or through the CULTEC StormFilter Unit (or other pretreatment device). CCTV inspection of this row can be deployed through this access port to deter mine if any sediment has accumulated in the inlet row.

B. If the CULTEC bed is not equipped with an inspection port, then access to the inlet row will be through an upstream manhole or the CULTEC StormFilter.

1. Manhole Access
This inspection should only be carried out by persons trained in confined space entry and sewer inspection services. After the manhole cover has been removed a gas detector must be lowered into the manhole to ensure that there are not high concentrations of toxic gases present. The inspector should be lowered into the manhole with the proper safety equipment as per OSHA requirements. The inspector may be able to observe sediment from this location. If this is not possible, the inspector will need to deploy a CCTV robot to permit viewing of the sediment.

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2. StormFilter Access
Remove the manhole cover to allow access to the unit. Typically a 30-inch (750 mm) pipe is used as a riser from the StormFilter to the surface. As in the case with manhole access, this access point requires a technician trained in confined space entry with proper gas detection equipment. This individual must be equipped with the proper safety equipment for entry into the StormFilter. The technician will be lowered onto the StormFilter unit. The hatch on the unit must be removed. Inside the unit are two filters which may be removed according to StormFilter maintenance guidelines. Once these filters are removed the inspector can enter the StormFilter unit to launch the CCTV camera robot.

C. The inlet row of the CULTEC system is placed on a polyethylene liner to prevent scouring of the washed stone beneath this row. This also facilitates the flushing of this row with high pressure water through a culvert cleaning nozzle. The nozzle is deployed through a manhole or the StormFilter and extended to the end of the row. The water is turned on and the inlet row is back-flushed into the manhole or StormFilter. This water is to be removed from the manhole or StormFilter using a vacuum truck.

III. Maintenance Guidelines

The following guidelines shall be adhered to for the operation and maintenance of the CULTEC stormwater management system:

A. The owner shall keep a maintenance log which shall include details of any events which would have an effect on the system's operational capacity.

B. The operation and maintenance procedure shall be reviewed periodically and changed to meet site conditions.

C. Maintenance of the stormwater management system shall be performed by qualified workers and shall follow applicable occupational health and safety requirements.

D. Debris removed from the stormwater management system shall be disposed of in accordance with applicable laws and regulations.

IV. Suggested Maintenance Schedules

A. Minor Maintenance
The following suggested schedule shall be followed for routine maintenance during the regular operation of the stormwater system:

Frequency	Action
Monthly in first year	Check inlets and outlets for clogging and remove any debris, as required.
Spring and Fall	Check inlets and outlets for clogging and remove any debris, as required.
One year after commissioning and every third year following	Check inlets and outlets for clogging and remove any debris, as required.

B. Major Maintenance
The following suggested maintenance schedule shall be followed to maintain the performance of the CULTEC stormwater management chambers. Additional work may be necessary due to insufficient performance and other issues that might be found during the inspection of the stormwater management chambers. (See table on next page)

For more information, contact CULTEC at (203) 775-4416 or visit www.cultec.com.

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	Frequency	Action
Inlets and Outlets	Every 3 years	• Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
	Spring and Fall	• Check inlet and outlets for clogging and remove any debris as required.
CULTEC Stormwater Chambers	2 years after commissioning	• Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. • Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
	9 years after commissioning every 9 years following	• Clean stormwater management chambers and feed connectors of any debris. • Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. • Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
	45 years after commissioning	• Clean stormwater management chambers and feed connectors of any debris. • Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. • Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique. • Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. • Attain the appropriate approvals as required. • Establish a new operation and maintenance schedule.
Surrounding Site	Monthly in 1st year	• Check for depressions in areas over and surrounding the stormwater management system.
	Spring and Fall	• Check for depressions in areas over and surrounding the stormwater management system.
	Yearly	• Confirm that no unauthorized modifications have been performed to the site.

For additional information concerning the maintenance of CULTEC Subsurface Stormwater Management Chambers, please contact CULTEC, Inc. at 1-800-428-5832.

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WQMP
Operation & Maintenance (O&M) Plan

Project Name:_____

Prepared for:

Project Name: _____

Address:_____

City, State Zip:_____

Prepared on:

Date:_____

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This O&M Plan describes the designated responsible party for implementation of this WQMP, including: operation and maintenance of all the structural BMP(s), conducting the training/educational program and duties, and any other necessary activities. The O&M Plan includes detailed inspection and maintenance requirements for all structural BMPs, including copies of any maintenance contract agreements, manufacturer's maintenance requirements, permits, etc.

8.1.1 Project Information

Project name	
Address	
City, State Zip	
Site size	
List of structural BMPs, number of each	
Other notes	

8.1.2 Responsible Party

The responsible party for implementation of this WQMP is:

Name of Person or HOA Property Manager	
Address	
City, State Zip	
Phone number	
24-Hour Emergency Contact number	
Email	

8.1.3 Record Keeping

Parties responsible for the O&M plan shall retain records for at least 5 years.

All training and educational activities and BMP operation and maintenance shall be documented to verify compliance with this O&M Plan. A sample Training Log and Inspection and Maintenance Log are included in this document.

8.1.4 Electronic Data Submittal

This document along with the Site Plan and Attachments shall be provided in PDF format. AutoCAD files and/or GIS coordinates of BMPs shall also be submitted to the City.

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Appendix ____

BMP SITE PLAN

Site plan is preferred on minimum 11” by 17” colored sheets, as long as legible.

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BMP OPERATION & MAINTENANCE LOG

Project Name: _____

Today's Date: _____

Name of Person Performing Activity (Printed): _____

Signature: _____

BMP Name (As Shown in O&M Plan)	Brief Description of Implementation, Maintenance, and Inspection Activity Performed

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Minor Maintenance

Frequency		Action
Monthly in first year		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
□ Month 1	Date:	
□ Month 2	Date:	
□ Month 3	Date:	
□ Month 4	Date	
□ Month 5	Date:	
□ Month 6	Date:	
□ Month 7	Date:	
□ Month 8	Date:	
□ Month 9	Date:	
□ Month 10	Date:	
□ Month 11	Date:	
□ Month 12	Date:	
Spring and Fall		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
One year after commissioning and every third year following		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
□ Year 1	Date:	
□ Year 4	Date:	
□ Year 7	Date:	
□ Year 10	Date:	
□ Year 13	Date:	
□ Year 16	Date:	
□ Year 19	Date:	
□ Year 22	Date:	

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Major Maintenance

	Frequency		Action
Inlets and Outlets	**Every 3 years**		Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
			Notes
	□ Year 1	Date:	
	□ Year 4	Date:	
	□ Year 7	Date:	
	□ Year 10	Date:	
	□ Year 13	Date:	
	□ Year 16	Date:	
	□ Year 19	Date:	
	□ Year 22	Date:	
	Spring and Fall		Check inlet and outlets for clogging and remove any debris, as required.
			Notes
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
CULTEC Stormwater Chambers	**2 years after commissioning**		□ Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. □ Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
			Notes
	□ Year 2	Date:	

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Major Maintenance

	Frequency		Action
CULTEC Stormwater Chambers	**9 years after commissioning every 9 years following**		□ Clean stormwater management chambers and feed connectors of any debris. □ Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. □ Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
			Notes
	□ Year 9	Date:	
	□ Year 18	Date:	
	□ Year 27	Date:	
	□ Year 36	Date:	
	45 years after commissioning		□ Clean stormwater management chambers and feed connectors of any debris. □ Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. □ Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique. □ Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. □ Attain the appropriate approvals as required. □ Establish a new operation and maintenance schedule.
			Notes
	□ Year 45	Date:	

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Major Maintenance

	Frequency		Action
Surrounding Site	**Monthly in 1st year**		□ Check for depressions in areas over and surrounding the stormwater management system.
			Notes
	□ Month 1	Date:	
	□ Month 2	Date:	
	□ Month 3	Date:	
	□ Month 4	Date:	
	□ Month 5	Date:	
	□ Month 6	Date:	
	□ Month 7	Date:	
	□ Month 8	Date:	
	□ Month 9	Date:	
	□ Month 10	Date:	
	□ Month 11	Date:	
	□ Month 12	Date:	
	Spring and Fall		□ Check for depressions in areas over and surrounding the stormwater management system.
			Notes
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	Yearly		□ Confirm that no unauthorized modifications have been performed to the site.
			Notes
	□ Year 1	Date:	
	□ Year 2	Date:	
	□ Year 3	Date:	
	□ Year 4	Date:	
	□ Year 5	Date:	
	□ Year 6	Date:	
	□ Year 7	Date:	

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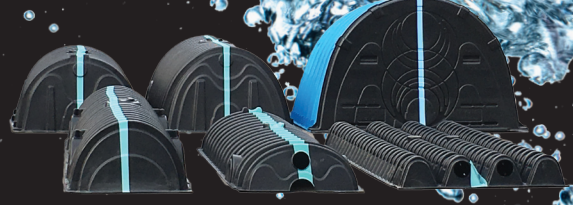


Attachment D

SOILS MAP

Soil Map—Cumberland County and Part of Oxford County, Maine
(Maine Medical Center area)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 15, Sep 6, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Au	Au Gres loamy sand	6.9	1.5%
BgB	Belgrade very fine sandy loam, 0 to 8 percent slopes	8.1	1.8%
Cu	Cut and fill land	39.7	8.6%
DeB	Deerfield loamy fine sand, 3 to 8 percent slopes	60.4	13.1%
Gp	Gravel pits	5.5	1.2%
HfD2	Hartland very fine sandy loam, 15 to 25 percent slopes, eroded	3.1	0.7%
HlB	Hinckley loamy sand, 3 to 8 percent slopes	261.8	57.0%
HlC	Hinckley loamy sand, 8 to 15 percent slopes	13.4	2.9%
HlD	Hinckley loamy sand, 15 to 25 percent slopes	33.9	7.4%
Sz	Swanton fine sandy loam	0.4	0.1%
W	Water	4.7	1.0%
Wa	Walpole fine sandy loam	4.1	0.9%
WmB	Windsor loamy sand, 0 to 8 percent slopes	17.2	3.7%
Totals for Area of Interest		**459.3**	**100.0%**

Y

WRITTEN SUBMISSION 24 – CONSISTENCY WITH CITY MASTER PLANS
BRAMHALL ST. – 22; MMC CONGRESS STREET BUILDING
LEVEL III SITE PLAN APPLICATION

PAGES 24 – 27 OF MMC'S INSTITUTIONAL DEVELOPMENT PLAN DESCRIBES HOW MMC'S PLAN IS CONSISTENT WITH THE CITY OF PORTLAND'S COMPREHENSIVE PLAN. THOSE PAGES ARE ATTACHED TO THIS DOCUMENT.

COMPLIANCE WITH THE COMPREHENSIVE PLAN

MMC, being a long term member of the Portland community, recognizes the Comprehensive Plan contains the City's overall goals for growth and change through the articulation of a variety of policy directives and goals for the development. Among other things, the Plan addresses the City's infrastructure, commercial/business development, transportation resources, industry, and commerce and residential housing plans.

The MMC IDP and Regulatory Framework are in basic harmony with the City's overarching goals and policies. With its IDP and Regulatory Framework, MMC has balanced and accommodated the many City goals and policies in a way that advances the City's overall best interests while at the same time addresses the high priority healthcare needs of Portland's residents and the people of the State of Maine. This balancing is exactly the type of flexibility that the City's recently drafted IOZ ordinance is meant to facilitate.

The Comprehensive Plan challenges the City to "support the vision of large, transformative projects [such as the MMC modernization project] through strategic, cost effective, and incremental actions" (*Comprehensive Plan*, p.74).

MMC IDP: COMPLIANCE WITH THE COMPREHENSIVE PLAN

In this IDP, MMC conveys the need to modernize its facility in order to meet the healthcare needs of the people of northern New England. This includes not only upgrading clinical space and providing for the needs of patients and families, but also continuing its investment in its personnel and their ability to travel to and from the workplace and secure needed parking. The adopted 2035 Comprehensive Plan "promotes the orderly expansion of institutional uses, such as educational and hospital campuses, which are central to workforce development, employment, and the health of the local and regional economies" (*Comprehensive Plan*, p.45).

<u>Economic Growth</u>

Employee engagement indicators reveal that one of the issues of greatest importance to current and future employees, in addition to compensation, is parking availability. In order to attract a high quality, highly educated workforce, MMC factors into its operations these two important considerations. Following the completion of its short-term modernization project, MMC projects a growth in its employment base into the future in part because of its status as an excellent academic medical center. Portland's Comprehensive Plan promotes the growth in employment base and supports sustainable growth in education and medical institutions (*Comprehensive Plan*, pp. 44 and 88)

Transportation

MMC has considered its transportation needs holistically, factoring into its future development alternative means of transportation. Since 2009, MMC has implemented a Transportation Demand Management (TDM) plan called "Get on Board!". MMC is updating that plan and considering enhancements to encourage more walking, cycling, and public transportation by its employees.

MMC's ability to promote alternative modes of transportation and success in TDM relies on the availability of a regional system of safe and reliable alternative modes of transportation. Therefore, MMC supports the City's effort to 'explore the technical and financial feasibility of a Transportation Management Association (TMA) as a means of improving access to, and mobility around, downtown, and the waterfront.' (Comprehensive plan, p.76)".

MMC has been, and continues to be, committed to the process and has often been cited by the City of Portland Planning Department as a TDM role model in the City.

Environment

A clean environment is important for healing and health. MMC is environmentally conscious and engages in recycling to minimize the generation and environmental impacts of solid waste. The Hospital conserves water when possible, and has switched away from pesticides to more organic landscape solutions reflecting Portland's goal of "model[ling] environmentally sound landscape management practices, such as planting native species, and limiting the use of pesticides and fertilizers" (*Comprehensive Plan*, p. 20). Buildings are built with energy efficiency standards in mind. Local farmers visit the campus weekly during harvest months and employees are encouraged to support the local food movement. The Comprehensive Plan also notes the need to "support a healthy, resilient, and sustainable food system by collaborating with local and regional stakeholders" (*Comprehensive Plan*, p.20).

MMC REGULATORY FRAMEWORK: COMPLIANCE WITH THE COMPREHENSIVE PLAN

In keeping with the goals of the Comprehensive Plan, MMC has projected its future expansion needs, taking into account the neighborhood context in which it is situated. MMC has minimized future expansion into residential areas adjacent to its campus, thereby preserving housing stock in the City (*Comprehensive Plan*, pp. 48-50). It has appreciated the neighborhood involvement in

its zoning process and has been responsive to the concerns raised.

MMC is taking the bold step of reorienting its front entrance to Congress St, which serves as a gateway corridor to the City of Portland. The area presently is commercial in nature and in need of investment and activation as is recognized by the City's *Comprehensive Plan* (pp. 84, 86). Welcoming the public at the new entrance accomplishes a number of land use goals: it adds tremendous activity to the streetscape, with people coming and going. It also eliminates traffic in the residential neighborhoods of the West End and Western Promenade by providing clear wayfinding directly off of Interstate 295 and the major arterials entering the City. Further, investment in this area will transform the area with the expectation that other properties in the vicinity will likewise invest. In fact, the owners of Union Plaza, located at the junction of Congress St and St John St, testified before the Portland Planning Board that they have been waiting for such investment before they took the step of redesigning and investing further in that property. MMC expects, and is excited about, a transformation of the area into a more vibrant, active and clean area, good for local merchants, hospitality businesses, restaurants and residents.

The *Comprehensive Plan* identifies the St John St / Congress St area as a "priority node, an area that has seen disinvestment, grown in sprawling patterns, simply have the potential to serve as focal points for change in the forms of increased density or, height, streetscape improvements, or diversification of uses to better serve neighborhood needs" (*Comprehensive Plan* p. 84, see **Fig.1.8 on page 27**). MMC's IDP will serve as the catalyst to stimulate new development, investment and reinvestment in this area of the City.

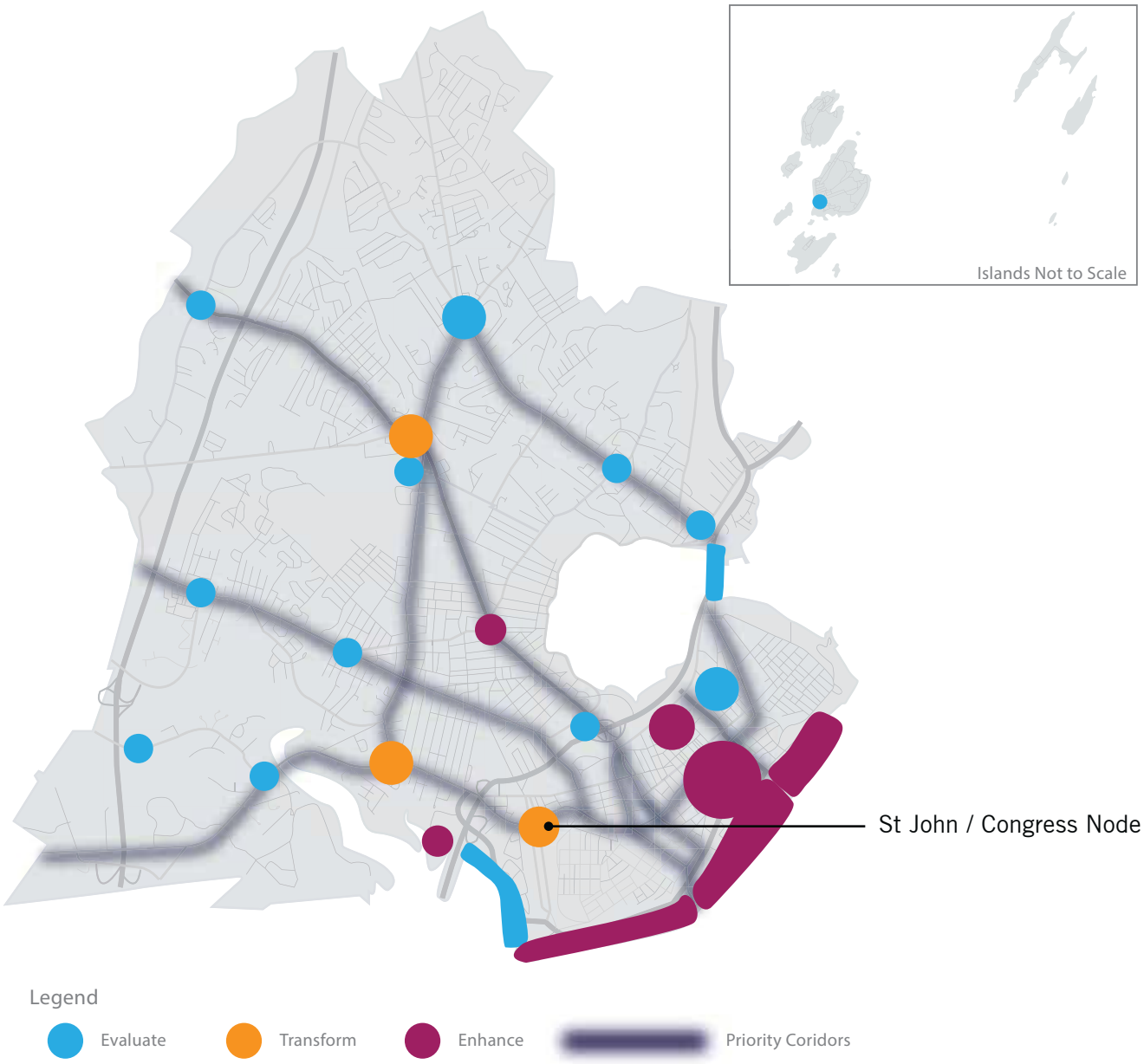
MMC's IOZ Regulatory Framework provides the mechanism for thoughtful, future development to transform the priority corridor identified by the City into an area of "additional mixed uses, higher density growth to take advantage of the transit benefits and services that well-designed, diverse corridors can offer" (*Comprehensive Plan*, p.84).

CONCLUSION

From an analysis of MMC's IDP, it becomes clear that the IDP is consistent with the City's Comprehensive Plan and the purposes contained within the City's IOZ ordinance.

From an analysis of the Regulatory Framework that accompanies MMC's IDP, it becomes clear that the Regulatory Framework is consistent with the City's Comprehensive Plan and with MMC's IDP.

Fig.1.8 Diagram Showing Priority Nodes and Corridors, City of Portland Comprehensive Plan (2017)



Maine Medical Center
Congress Street
New Construction Code Report
February 14, 2018



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Boston, MA 02111
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INTRODUCTION

Perkins + Will has retained AKF Group LLC to prepare this narrative code report for the proposed Congress Street building on the Maine Medical Center (MMC) campus in Portland, ME. The seven-story high-rise building will have operating rooms, patient sleeping/recovery rooms, storage areas, offices, and staff facilities including locker rooms and lounges. The building will be constructed directly adjacent to the Visitor Garage and the Bean Building. A fire wall will be constructed between the Congress Street building and the Visitor Garage. A fire wall will not be constructed between the Congress Street building and the Bean Building since these buildings will be considered part of the same building. This report summarizes the code requirements for the Congress Street building.

QUICK FACTS

- Aggregate Area: Approximately 234,300 SF
- Height: 7 stories above grade; basement below grade
- Sprinkler Status: To be fully sprinklered
- Standpipe System: Class I standpipe system to be installed
- Occupancy: Use Groups A-3, B, I-2 (Condition 2), S-1, & S-2
- Construction Type: Modified Type IA (i.e. Type IB)

1. APPLICABLE CODES & STANDARDS

The State of Maine requires municipalities with more than 4,000 residents to adopt and enforce the Maine Uniform Building and Energy Code (MUBEC). The next edition of MUBEC became effective on January 23, 2018. The following codes and standards are applicable to the project.

- International Building Code (IBC), 2015 Edition with ME Amendments
- International Energy Conservation Code (IECC), 2009 Edition with ME Amendments
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 62.1, Standard for Ventilation and Indoor Air Quality, 2013 edition

In addition to the codes identified above, the State Fire Marshal's Office promulgates the Rules of the State Fire Marshal, which adopt numerous NFPA codes and standards, including the following:

- NFPA 1, Uniform Fire Code, 2006 Edition with ME Amendments
- NFPA 13, Standard for Installation of Sprinkler Systems, 2016 Edition

The Plumbers' Examining Board promulgates the Maine Plumbing Code, which includes the following:

- International Association of Plumbing and Mechanical Officials (IAPMO), 2015 Uniform Plumbing Code (UPC), with ME amendments

The Electricians' Examining Board adopts and amends the following electrical code:

- NFPA 70, National Electrical Code, 2017 Edition

The following federal regulation also applies to the project (as referenced by the Maine Human Rights Commission – 5 M.R.S. §4594-G):

- Americans with Disabilities Act (ADA), 2010 Standards for Accessible Design

The Joint Commission also requires compliance with the following:

- NFPA 101, Life Safety Code, 2012 Edition
- NFPA 99, Health Care Facilities Code, 2012 Edition

The following design standards will also be used for the project:

- Facilities Guidelines Institute (FGI), Guidelines for Design and Construction of Hospitals and Outpatient Facilities, 2014 Edition

- ASHRAE Standard 170, Ventilation of Healthcare Facilities, 2013 edition

2. PROPOSED SCOPE OF WORK & USE

The proposed project involves the new construction of a seven story clinical building on Congress Street in Portland, Maine. The building will have operating rooms, patient sleeping/recovery rooms, storage areas, offices, and staff facilities including locker rooms and lounges.

The building will include the following use groups and occupancies:

Group A-3/ assembly:	Conference rooms, lounges, and multi-purpose spaces exceeding 750 SF and 50 people.
Group B/ business:	Office areas, staff lockers, conference/meeting space less than 750 SF or 50 people
Group I-2 (Condition 2)/ healthcare:	Inpatient hospital care
Group S-1/ ordinary hazard storage:	Linen storage
Group S-2/ low hazard storage:	Storage/utility spaces

As indicated in the list above, the building contains Use Groups A-3, B, I-2, S-1, and S-2. These occupancies are permitted as mixed, nonseparated occupancies per the height and area analysis located in Section 4 of this report.

3. HIGH-RISE BUILDING FEATURES

The building is considered a high-rise structure since it contains an occupied floor that is located more than 75 feet above the lowest level of fire department vehicle access (IBC 202 and NFPA 101 Section 3.3.32.7). High-rise buildings must comply with IBC 403 and NFPA 101 Section 11.8. The applicable provisions for high-rise buildings are summarized below.

3.1 Structural

Since the building is considered Risk Category IV per IBC Table 1604.5, the structural integrity requirements of IBC 403.2.3 apply. Section 403.2.3 requires interior exit stairway and elevator hoistway wall assemblies to comply with impact classifications of ASTM C 1629/ C 1629M. Spray fire-resistant materials (SFRM) must have a minimum bond strength of 430 psf (IBC Table 403.2.4).

3.2 Fire Protection Systems

The following fire protection systems are required within the building as noted. Refer to Section 8 of this report for further details regarding fire protection systems.

Automatic Sprinkler System

An automatic sprinkler system is required throughout the building per IBC Sections 403.3 & 903.2.6 and NFPA 101 Sections 11.8.3.1 & 18.3.5.1. A secondary onsite water supply is required if the building is located in seismic design category C, D, E, or F (IBC 403.3). The seismic design category should be confirmed with the geotechnical or structural engineer of record.

Standpipe System

Class I standpipes must be provided (IBC 905.3 & 403.4.3 and NFPA 101 Section 11.8.4.1).

Fire Alarm System

A manual fire alarm system with an emergency voice/alarm communication system must be provided in accordance with IBC 907.2.13 (IBC 403.4.2 & 403.4.4 and NFPA 101 Section 11.8.4.1).

Smoke Detection System

An automatic smoke detection system must be provided in accordance with IBC 907.2.13.1 (IBC 403.4.1).

Emergency Responder Radio Coverage

Emergency responder radio coverage or a two-way telephone communication system must be provided (IBC 403.4.5, NFPA 1 Section 13.7.2.27.2.2, and NFPA 101 Section 11.8.4.2).

Fire Command Center

A fire command center (FCC) complying with IBC 911 must be provided in a location approved by the fire department (IBC 403.4.6 & NFPA 101 Section 11.8.6). The fire command center will be located on Level CG adjacent to Stair 1. The FCC must comply with the following requirements and contain the following features.

1. Location, layout, and features must be approved by the fire chief
2. Must be separated by 1-hr rated construction
3. Must be 200 sf with minimum dimension of 10 ft
4. Unrelated storage is prohibited in the FCC
5. Emergency voice/alarm communication system control unit
6. Fire department communications system
7. Fire detection and alarm system annunciator
8. Annunciator unit visually indicating the location of the elevators and whether they are operational

9. System indicators and controls for air distribution systems

10. Fire fighter's control panel for smoke control systems

11. Controls for unlocking interior exit stairway doors simultaneously

12. Sprinkler valve and waterflow detector display panels

13. Emergency and standby power status indicators

14. Telephone for fire department use with controlled access to the public telephone system

15. Fire pump status indicators

16. Schematic building plans

17. Building Information Card

Smoke Removal

A means of smoke removal in post-fire salvage operations must be provided in accordance with IBC 403.4.7. The means of smoke removal may be provided by natural or mechanical ventilation. Post-fire smoke purge can be achieved through natural or mechanical ventilation. Natural ventilation must consist of operable windows /panels distributed at 50-foot intervals (maximum) and with a total area of at least 40 SF per 50 linear feet of perimeter. Mechanical ventilation must provide one air change every 15 minutes with return and exhaust air moved directly to the outside.

3.3 Standby and Emergency Power

Standby power must be provided for the following (IBC 403.4.8.3 and NFPA 101 Section 11.8.5.2.4):

1. Power and lighting for the fire command center
2. Ventilation and automatic fire detection equipment for smokeproof enclosures
3. Elevators, including elevators provided for accessible means of egress and fire service access, where applicable
4. Mechanical equipment for smoke control systems
5. Electric fire pump
6. Jockey pump
7. Air compressor serving dry-pipe and pre-action systems

Emergency power must be provided for the following (IBC 403.4.8.4):

1. Exit signs and means of egress illumination
2. Elevator car lighting
3. Automatic fire detection systems
4. Fire alarm systems

5. Electrically powered fire pumps

Standby and emergency power must comply with IBC 2702 and 3003. In addition, standby power for elevators serving as accessible means of egress must comply with IBC 1009.4. Generator sets and fuel line piping located inside the building must be protected in accordance with IBC 403.4.8.1 and 403.4.8.2.

3.4 Means of Egress

Means of egress in high-rise buildings must comply with the additional provisions of IBC 403.5. These provisions include the following.

Remoteness

Required interior exit stairways in the high-rise portions of the building must be separated by a distance of at least 30 feet or at least one quarter of the length of the maximum overall diagonal of the building or area served (whichever is less). This separation distance is measured in a straight line between the closest points of the stairway enclosures. Where three or more interior exit stairways exist, at least two must be separated in accordance with IBC 403.5.1. The proposed stairs comply with the remoteness criteria.

Stairwell Re-entry & Communication System

Since the stairs serve more than four stories, re-entry to other floors from inside the stairwells must be provided in accordance with NFPA 101 Section 7.2.1.5.8 (NFPA 101 Section 18.2.2.2.9). Per this section, all stair enclosure doors must meet one of the following conditions:

1) Re-entry from the stair enclosure to the interior of the building must be provided.
2) An automatic release that is actuated with the initiation of the building fire alarm system must be provided to unlock all stair enclosure door assemblies to allow re-entry.
3) Selected re-entry must be provided and must satisfy all of the following criteria:
    a. There shall be not less than two levels where it is possible to leave the stair enclosure to access another exit.
    b. There shall be not more than four stories intervening between stories where it is possible to leave the stair enclosure to access another exit.
    c. Re-entry shall be possible on the top story or next-to-top story served by the stair enclosure, and such story shall allow access to another exit.
    d. Door assemblies allowing re-entry shall be identified as such on the stair side of the door leaf.
    e. Door assemblies not allowing re-entry shall be provided with a sign on the stair side indicating the location of the nearest door opening, in each direction of travel, that allows re-entry or exit.

In addition, stairway doors other than the discharge doors cannot be locked from the stairway side unless they can be unlocked simultaneously from the fire command center (IBC 403.5.3). This requires a stairwell communication system provided on at

least every fifth floor. The communication system must connect to an approved constantly attended station (IBC 403.5.3.1).

Smokeproof Enclosures

Every required exit stairway serving high-rise portions of the building must comply with the smokeproof enclosure requirements of IBC 909.20 and 1023.11 (IBC 403.5.4). The most common method for providing smokeproof enclosures in sprinklered buildings is through stair pressurization complying with IBC 909.20.5. A ventilated vestibule is not required using this method, provided that the pressure difference between the stair shaft and the balance of the building is a minimum of 0.10 inch of water and a maximum of 0.35 inch of water. The pressure difference must be measured with the stairway doors closed and under maximum anticipated conditions of stack effect and wind effect (IBC 909.20.5).

Luminous Egress Path Markings

Luminous egress path markings must be provided in accordance with IBC 1058.

3.5 Elevators

The following sections provide information regarding the elevator requirements.

Fire Service Access Elevators

A minimum of two fire service access elevators are required in buildings with an occupied floor greater than 120 feet above the lowest level of fire department vehicle access where at least two elevators are provided (IBC 403.6.1). Based on the plans provided to AKF on February 12, 2018 the highest occupied floor (i.e. Level G) is less than 120 feet above the lowest level of fire department vehicle access. Therefore, fire service access elevators are not required at this time. However, since future growth is expected to include a vertical expansion to the building, the current design includes two fire service access elevators. The fire service access elevator requirements of IBC 3007 include the following:

Every floor must be served by fire service access elevators (IBC 3007.1).

Fire service access elevators must be provided with a lobby complying with IBC 3007.6 (note that multiple fire service access elevators are permitted to be served by the same lobby). Per IBC 3007.6, the fire service access elevator lobbies must meet the following requirements:

- Enclosed with a smoke barrier having a minimum 1-hour fire-resistance rating and ¾-hour fire door assemblies
  - Enclosed fire service access elevator lobbies are not required on the level of exit discharge
- Have access to an interior exit stairway either directly from the lobby or through a protected path travel
  - The protected path of travel must have the same level of fire protection as the elevator lobby

- The protected path of travel must be separated from the enclosed elevator lobby through an opening protected by a smoke and draft control assembly complying with IBC 716.5.3

- Must have a minimum area of 150 SF with a minimum dimension of 8 feet, regardless of how many fire service access elevators are served
- Symbols complying with 780 CMR 3007.6.5 must be installed on each side of the hoistway door frame of each fire service access elevators
- A Class I standpipe hose connection must be provided in the exit stairway adjacent to the lobby. Access to this stairway is also required from each floor without passing through the FSAE lobby. It is our understanding that the design team is seeking a variance for relief from this requirement.
- Fire service access elevators must be provided with an approved method to prevent the infiltration of water into the hoistway enclosure caused by the operation of the automatic sprinkler system outside of the enclosure (IBC 3007.3).

As indicated in Section 3.3 of this report, fire service access elevators are required to be provided with standby power.

Other Elevator Lobbies

Enclosed elevator lobbies are required for all other elevators that serve high-rise levels within the building (IBC 3006.2(5)). These lobbies are required to consist of smoke partitions complying with IBC 710. Doors penetrating the enclosed elevator lobby must comply with IBC 710.5.2.2, 710.5.2.3, and 716.5.9. Ducts and air transfer openings must comply with IBC 717.5.4.1.

Number of Elevator Cars per Hoistway

Where four or more elevator cars serve all or the same portion of a building, the elevators must be located in at least two separate hoistways. A maximum of four elevator cars can be located in a single hoistway (IBC 3002.2).

Two-Way Communication

A two-way communication system must be provided at the landing serving each elevator or bank of elevators on each accessible floor that is one or more stories above or below the level of exit discharge. The two-way communication system must provide communication between the required location and the fire command center or a central control point location approved by the fire department. The system must include both audible and visible signals. Directions for the use of the system and written identification of the location must be posted adjacent to the system (IBC 1009.8).

4. HEIGHT & AREA

The building must comply with the building height and area limitations of IBC 504 and 506 based on the most restrictive occupancy classification of the building. The height and area limitations have been evaluated based on non-separated mixed uses including Use Groups A-3, B, I-2, S-1, and S-2. Since the building exceeds 5 stories in height, Type IA

construction (i.e. noncombustible, 3-hour rated) is required (IBC 503.3 and 504.4). Type IA construction is not limited in building height, number of stories, or floor area.

High-rise buildings are permitted a reduction in the required fire-resistance ratings for building elements where sprinkler control valves are provided with supervisory initiating devices and water-flow initiating deices on each floor (IBC 403.2.1.1). Since the building is less than 420 feet in height, the fire-resistance ratings required for Type IB construction (with the exception of columns) may be used while granting unlimited height and area allowances per Type IA construction (IBC 403.2.1). Although NFPA 101 does not contain a similar allowance, NFPA 101 Table 18.1.6.1 permits sprinklered healthcare buildings of Type IB (222) construction to be an unlimited in number of stories. Therefore, the building can be constructed using the required ratings for Type IB construction (except that columns must be 3-hour rated), while still utilizing the height and area limits applicable to Type IA construction.

Note that any future vertical expansion projects cannot extend the height of the building to above 420 feet since the reduction permitted by IBC 403.2.1 does not apply to buildings over 420 feet in height.

5. TYPE OF CONSTRUCTION

The following table summarizes the required ratings for modified Type IA construction (i.e. Type IB) in accordance with IBC Table 601 and NFPA 1 Table A.12.2.1.

IBC Table 601 & NFPA 101 Table A.8.2.1.2
Fire-Resistance Rating Requirements for Building Elements (Hours)

Element	Modified Type IA (i.e. Type IB) Rating (hours)
Primary structural frame (see Section 202) Columns Other	 3[A] 2[A]
Bearing walls Exterior Interior	 2[A] 2[A]
Nonbearing walls and partitions Exterior	See Table 602 discussion below.
Nonbearing walls and partitions Interior	0
Floor construction and secondary members (see Section 202)	2[A]
Roof construction and secondary members (see Section 202)	1

[A] Not less than the rating of the assemblies supported, i.e. shaft enclosures, etc.

The non-bearing exterior wall requirements are based on the fire separation distance (FSD) of each wall. The FSD is measured perpendicularly from the face of each exterior wall to the closest interior lot line, the centerline of a street, alley, or public way, or an imaginary lot line between two buildings on the same lot. Where the FSD is greater than or equal to 30 feet, the non-bearing exterior walls do not require a fire-resistance rating.

Where Table 601 or 602 requires an exterior wall to be fire-resistance rated and the FSD is less than or equal to 10 feet, the wall must be rated for exposure to fire from both sides (IBC 705.5). The exterior walls are required to maintain their structural stability for the duration of the time indicated by the fire-resistance rating.

IBC Table 602 Fire-Resistance Rating Requirements for Exterior Walls Based on Fire Separation Distance Type IA Construction

Fire Separation Distance = X (feet)	Required Fire Resistance Rating
$X < 5$	1-hr
$5 \leq X < 10$	1-hr
$10 \leq X < 20$	1-hr
$X \geq 20$	0

Since the Congress Street building and Bean building are considered part of the same building, exterior wall protection is not required for the walls facing the Bean building. In addition, the entire north and west walls of the Congress Street building have a FSD of more than 20 feet, thus allowing unrated exterior walls in these areas. A 3-hour fire wall will be provided between the Congress Street and Visitor Garage buildings. Any exterior walls facing the Visitor Garage (other than the fire wall) must have a 1-hour rating due to the distance between the Visitor Garage and the Congress Street building.

6. FIRE AND SMOKE PROTECTED FEATURES

6.1 Exterior Walls & Opening Protectives

Openings in the exterior walls must comply with IBC 406.5.2 based on the FSD of each wall. The opening limitations are summarized below for Type IA construction.

IBC Table 705.8 Maximum Area of Exterior Wall Openings Based on Fire Separation Distance and Degree of Opening Protection

Fire Separation Distance (feet)	Degree of Opening Protection	Allowable Area
$X < 3$	Unprotected, Sprinklered	Not Permitted
$3 \leq X < 5$	Unprotected, Sprinklered	15%
$5 \leq X < 10$	Unprotected, Sprinklered	25%
$10 \leq X < 15$	Unprotected, Sprinklered	45%
$15 \leq X < 20$	Unprotected, Sprinklered	75%
$20 \leq X$	Unprotected, Sprinklered	No Limit

Since the north and west walls of the Congress Street building have a FSD of more than 20 feet, these walls are permitted to have unlimited unprotected openings. Due to the separation distance between the Congress Street and Visitor Garage buildings, no openings are permitted in the exterior walls facing Visitor Garage.

6.2 Shaft Enclosures

Vertical openings must be enclosed with shaft construction unless an alternative provision in IBC 712 and NFPA 101 Section 8.6 is met. Shafts connecting four stories or more must be enclosed with at least 2-hour fire-resistance rated construction. Shafts connecting three stories or less must be enclosed with 1-hour rated construction (IBC 713.4 and NFPA 101 Section 8.6.5).

Where the exterior wall of an exit enclosure is exposed to adjacent exterior walls by an angle less than 180 degrees, the adjacent exterior wall, or the exit enclosure wall must be rated. Whichever wall is rated must have a rating of at least 1-hour with ¾-hour opening protectives. The rating must extend at least 10 feet horizontally from the nonrated wall. The protection must extend from the ground to a level 10 feet above the highest landing of the stair, or the roofline, whichever is lower (IBC 1023.7).

6.3 Atrium

A 7-story atrium is proposed within the building. Atriums must comply the IBC 404 and NFPA 101 Section 8.6.7. In general, atriums must be enclosed with 1-hour fire barriers, with exceptions permitted for sprinkler-protected glass and glass-block walls. AKF is conducting perform a fire modeling analysis for the design of the atrium smoke control system to be reviewed with the local AHJ and State Fire Marshal's office.

Note that the atrium is not required to be included in the smoke compartment area since it is separated by sprinkler-protected glass in accordance with IBC 404.6(1.1) and NFPA 101 8.6.7 (NFPA 101 Section 18.3.7.1(3)).

6.4 Corridors

In Group I-2 occupancies, corridors must be continuous to exits and separated from other areas with walls that comply with the requirements for smoke partitions (IBC 407.2 & 407.3 and NFPA 101 Section 18.3.6.1). Doors within corridor walls are not required to be fire-resistance rated; however they must be self-latching, be provided with positive latching hardware, and must provide an effective barrier to limit smoke spread (IBC 407.3.1 and NFPA 101 Sections 18.3.6.2.2, 18.3.6.3.1, & 18.3.6.3.5). Note that there are some spaces that are permitted to be open to corridors as outlined below.

Waiting Areas

Waiting areas that are open to corridors must comply with the following requirements (IBC 407.2.1 and NFPA 101 Section 18.3.6.1(2)).

1. Must be constructed as required for corridors (i.e. smoke partitions);
2. Does not contain sleeping rooms, treatment rooms, incidental uses, or hazardous uses;
3. The space is protected by an automatic fire detection system complying with IBC 907;

4. The corridor into which the space opens is protected by an automatic fire detection system that complies with IBC 907 or the smoke compartment is protected by quick-response sprinklers;
5. The space does not obstruct access to required exits;
6. The aggregate waiting area open to the corridor in each smoke compartment is no more than 600 SF.

Care Providers' Stations

Corridors may be open to spaces for care providers, supervisory staff, doctors' and nurses' charting, communications, and related clerical areas so long as such spaces are constructed as required for corridors (i.e. smoke partitions) per IBC 407.2.2.

6.5 Smoke Compartments

Smoke barriers must be used to subdivide every story having an occupant load of 50 or more persons or used by persons receiving care, treatment or sleeping into at least two smoke compartments, each with a maximum area of 22,500 SF (as limited by NFPA 101 Section 18.3.7.1). Smoke compartments are not required on Level CB, B, or G since these spaces do not contain a healthcare occupancy and are located above or below the healthcare occupancy (NFPA 101 Section 18.3.7.2). Similarly, a smoke compartment and corresponding refuge area are not required for the lobby area of Level CG since the area does not contain a healthcare occupancy and the space is separated from the healthcare occupancy by a 2-hour horizontal exit (NFPA 101 Section 18.3.7.2 (2)). The following requirements apply to the smoke compartments.

Fire-Resistance

The smoke compartments must be separated by 1-hour rated smoke barriers with 20-minute opening protections complying with IBC 709 and NFPA 101 Section 8.5 (IBC 407.5 and NFPA 101 Section 18.3.7.3).

The smoke barrier walls will serve as horizontal exits on Level CG through C4 in order to provide additional capacity and/or reduce travel distances. Horizontal exit walls must have a 2-hour fire-resistance rating and must be constructed as fire barriers. The requirements for horizontal exits are found in Section 1.1 of this report.

Travel Distance

The travel distance from the most remote point in each smoke compartment to the smoke barrier door must be a maximum of 200 feet (IBC 407.5 and NFPA 101 Section 18.3.7.1(4)). Refer to associated Life Safety Plans for measurements of travel distances to the smoke barriers.

Refuge Area

Each smoke compartment must contain a refuge area sized to accommodate the inpatient care occupants from adjacent smoke compartments. The refuge areas must be sized using a factor of 30 SF per patient. Where the refuge area serves ambulatory occupants, the area must be sized using a factor of 6 SF per occupant. Refuge areas may consist of corridors, sleeping areas, treatment rooms, lounges, dining areas, and

other low-hazard areas (IBC 407.5.1 and NFPA 101 Section 18.3.7.5.1). Refer to the associated Life Safety Plans for illustrations of refuge areas.

Independent Egress
Means of egress from each smoke compartment must be arranged such that once occupants egress from a smoke compartment they are not required to return through the smoke compartment to evacuate the building (IBC 407.5.2 and NFPA 101 Section 18.2.4.4).

Horizontal Assemblies
Where horizontal assemblies support smoke barriers that are part of smoke compartments, such horizontal assemblies must be designed to resist the passage of smoke (IBC 407.5.3).

Smoke Dampers
Smoke dampers are required for duct penetrations through a smoke barrier wall; however there is an exception for Group I-2, Condition 2 occupancies. If the HVAC system is fully ducted and the building is equipped throughout with quick-response sprinklers in accordance with IBC 903.3.2, smoke dampers are not required (IBC 717.5.5(2).

6.6 Care Suites

Care suites are provided on Level CG and C1. Care suites are permitted in lieu of providing patient sleeping rooms with direct access to a corridor (IBC 407.4.1 and NFPA 101 Section 18.2.5.6.4). The following requirements apply to the proposed care suites. Since the post-op patients may require up to 23-hour stays in these suites, the suites are considered "patient care sleeping suites" as defined by NFPA 101 Section 3.3.272.4).

Exit Access
Spaces not classified as care suites are not permitted to exit through a care suite. In care suites required to have more than one means of egress, on exit access path is permitted to pass through an adjacent care suite (IBC 407.4.4.1 and NFPA 101 Section 18.2.5.7.2.2(C)). One means of egress from the suite must be directly to a corridor (NFPA 101 Section 18.2.5.7.2.2(B)).

Separation
Care suites must be separated from other portions of the building by smoke partitions (IBC 407.4.4.2 and NFPA 101 Section 18.2.5.7.1.2).

Protection
Patient sleeping rooms must be provided with at least one of the following (IBC 407.4.4.5 and NFPA 101 Section 18.2.5.7.2.1(D)):

- Direct visual supervision from a normally attended location within the suite (glass walls and cubicle curtains are permitted) and any sleeping rooms not provided with direct visual supervision are provided with automatic smoke detection; or
- The entire suite is provided with automatic smoke detection.

Access to Corridor

Movement from habitable rooms within the care suite to a corridor door must not require passage through more than three doors and 100 feet of travel distance (IBC 407.4.4.3 and NFPA 101 Section 18.2.5.7.2.4(A)).

Number of Means of Egress

Care suites containing sleeping rooms must have two remote exit access doors from the suite where the suite is more than 1,000 SF (IBC 407.4.4.5.2 and NFPA 101 Section 18.2.5.7.2.2(A)).

Maximum Size

Care suites containing sleeping rooms must not exceed 7,500 SF. However, the maximum area of such care suites is permitted to be increased to 10,000 SF where both direct visual supervision and smoke detection are provided throughout the suite (IBC 407.4.4.5.1 and NFPA 101 Section 18.2.5.7.2.3).

All care suites included in the current design comply with the above requirements.

6.7 Incidental Uses

IBC Table 509 and NFPA 101 Table 8.5 prescribe requirements for the protection of several incidental uses in Group I-2/healthcare occupancies. The requirements of these tables are provided below.

Incidental Uses

Room or Area	Separation and/or Protection	Code Section
Boiler and fuel-fired heater rooms	1 hour	NFPA 101 Table 18.3.2.1
Laboratories not classified as Group H	1-hour and provide automatic sprinkler system	IBC Table 509
Laundry rooms over 100 SF	1 hour	IBC Table 509 & Section 509.4.2
Physical plant maintenance shops	1 hour	IBC Table 509 & NFPA 101 Table 18.3.2.1
In Group I-2 occupancies, waste and linen collection rooms with containers that have an aggregate volume of 64 gallons (8.6 ft^3) or more	1 hour	NFPA 101 Table 18.3.2.1
In Group I-2 occupancies, storage rooms greater than 100 SF	1 hour	IBC Table 509
In Group I-2 occupancies, storage rooms less than 100 SF but greater than 50 SF and storing combustible material	Smoke partition	NFPA 101 Table 18.3.2.1 & Section 8.7.1.2

Room or Area	Separation and/or Protection	Code Section
Fire Command Center	1 hour	IBC 403.4.6 & NFPA 101 Section 11.8.6
Fire Service Access Elevator Lobby	1-hour smoke barrier	IBC 3007.4.2
Other Elevator Lobbies	Smoke partition	IBC 3006.2(5)
Emergency Electrical Rooms	2-hours or sprinkler protection	NEC 700.10(D)(2)
Emergency Feeder Circuit Wiring	2-hours or sprinkler protection	NEC 700.10(D)(1)

Note that the 2-hour floor assembly between Level CB and Level CG will serve as the separation between the storage rooms located on Level CB and the Group I-2 occupancy located on Level CG. This arrangement is consistent with the approach for separated occupancies in both IBC 508.4 and NFPA 101 Section 6.1.14.4.

6.8 Fire Walls

The Congress Street building will be connected to two other buildings on the MMC site: the Bean Building and the Visitor Garage. A fire wall will be provided between the Congress Street Building and the Visitor Garage due to the difference in construction type between these two buildings. It is our understanding that the Congress Street building and Bean Building are considered part of the same building. Therefore, both the Congress Street and Bean buildings must be consistent with Type I construction. The requirements and implications for fire walls are identified in this section.

Fire-Resistance Rating

A 3-hour fire-resistance rating is required for fire walls in Group I occupancies (IBC 706.4).

Openings

The aggregate width of openings through a fire wall at any floor level cannot exceed 25% of the length of the wall (IBC 706.8). Doors or fire shutters in the fire wall must also have a 3-hour rating (IBC Table 716.5). Doors within the fire walls must be self- or automatic-closing (IBC 716.5.9). If doors are automatic-closing, they must be automatic-closing by the actuation of smoke detectors or by loss of power to the smoke detector or hold-open device. The doors must begin to close within 10 seconds of smoke detector activation or power failure (IBC 716.5.9.3).

Horizontal Continuity

Per IBC 706.5, fire walls must be continuous from exterior wall to exterior wall and must extend at least 18 inches beyond the exterior surface of exterior walls. However there are exceptions as follows:

1. The fire wall may terminate at combustible exterior sheathing or siding if the exterior walls within 4 feet of the fire wall on each side are 1-hour rated with ¾-hour opening protectives.
2. The fire wall may terminate at noncombustible exterior sheathing, siding, or other finish if such noncombustible finishes are extended a distance of at least 4 feet on each side of the fire wall.

Per IBC 706.5.2, fire walls must extend to the outer edge of horizontal projecting elements such as balconies, roof overhangs, canopies, marquees, and similar projections that are within 4 feet of the fire wall. Note however there are some exceptions to this requirement. The applicability of the exceptions depends on whether the projections contain concealed openings. If the projections do not contain concealed spaces, the fire wall is not required to extend to the edge of the projection if the exterior wall behind and below the projection is 1-hour fire-resistance rated for a distance at least equal to the depth of the projection. Exterior openings within this rated wall must be protected with ¾-hour opening protectives (IBC 706.5.2(1)).

Vertical Continuity

Per IBC 706.6, fire walls must have vertical continuity such that they extend from the foundation to a termination point at least 30 inches above both adjacent roofs unless one of the exceptions to Section 706.6 is met, as follows.

1. The buildings comply with the requirements for stepped buildings in IBC 706.6.1.
2. Two-hour fire-resistance rated fire walls may terminate at the underside of the roof sheathing, deck, or slab if the following provisions are met:
    a. The lower roof assembly within 4 feet of the fire wall is at least 1-hour fire-resistance rated and the entire length of the span of supporting elements for the rated roof assembly are1-hour rated as well.
    b. There are no openings in the roof within 4 feet of the fire wall.
    c. Each building has at least a Class B roof covering.
3. Where both buildings have at least a Class B roof covering, fire walls may terminate at the underside of noncombustible roof sheathing, deck or slabs. Openings in the roof within 4 feet of the fire wall are prohibited.
4. The buildings have sloped roofs complying with IBC 706.6.2.

Exterior Wall Exposure

Where the fire wall intersects the exterior walls and exterior walls form an angle of less than 180 degrees, protection must be provided by one of the following methods (IBC 706.5.1).

1. The exterior walls on both sides of the fire wall must have a 1-hour fire-resistance rating and ¾-hour opening protectives for a distance of 4 feet from the intersection with the fire wall.
2. An imaginary lot line must extend beyond the fire wall and the required fire-resistance rating and opening protection for the exterior walls on either side of the fire wall must be based on the FSD to this imaginary lot line.

7. INTERIOR FINISH

The interior finishes of the walls, ceilings, and floors of the building are governed by IBC Chapter 8 and NFPA 101 Chapter 10. These chapters outline the testing requirements for the different surfaces. The required tests and finish classifications are summarized in the tables below.

Finish Characteristics

Element	Test Method	Criteria
Wall & Ceiling Finishes	ASTM E84 or UL 723	Class A = FSI 0-25; SDI 0-450
		Class B = FSI 26-75; SDI 0-450
		Class C = FSI 76-200; SDI 0-450
Floor Finish	NFPA 253	Class I = 0.45 W/cm^2 or greater
		Class II = 0.22 W/cm^2 up to 0.45 W/cm^2
	DOC FF-1	Pass

Notes:
FSI = flame spread index
SDI = smoke-developed index

Interior Wall and Ceiling Finish Requirements by Occupancy (Fully Sprinklered Building)

Use Group	Walls & Ceilings			Floors	
	Exit enclosures and exit passageways	Corridors	Rooms and enclosed spaces	Exits and corridors	Other spaces
A-3	B	B	C	DOC FF-1	DOC FF-1
B	B	C	C	DOC FF-1	DOC FF-1
I-2	B	B	B[A]	Class II	Class II
S-1 & S-2	C	C	C	DOC FF-1	DOC FF-1

[A] Class C interior finish materials are permitted in rooms with a capacity of four persons or less.

The tables above show the required interior finish classes throughout the building based on the most restrictive requirements of IBC Table 803.11 and NFPA 101 Table A.10.2.2. Note that where corridors are shared by both occupancies, the most restrictive finish must be used (i.e. Class B). All floors throughout the building must pass the DOC FF-1 "pill test".

8. FIRE PROTECTION SYSTEMS

In addition to the systems discussed in Section 3 of this report, the following fire protection requirements also apply.

8.1 Automatic Sprinkler System

Since the smoke compartments contain patient sleeping rooms, listed quick-response or listed residential sprinklers must be used (NFPA 101 Section 18.3.5.6).

8.2 Fire Alarm and Detection System

In addition to the manual fire alarm system, an automatic smoke detection system must be provided in the inpatient corridors and in any areas open to the corridors (i.e. not separated by smoke partitions). Based on the plans provided to AKF on February 12, 2018, the proposed waiting areas are not open to the inpatient corridors.

The fire alarm system must transmit an alarm automatically to the municipal fire department (NFPA 101 Section 9.6.4 & 18.3.4.3.2.1).

8.3 Standpipe System

A standpipe system is required throughout the building since the floor level of the highest story is located more than 30 feet above the lowest level of fire department vehicle access. Class I standpipes must be provided in sprinklered high-rise buildings per IBC 905.3.1 and NFPA 101 Section 11.8.3.2.

Class I standpipes must be installed in the following locations in accordance with IBC 905.4:

- In every required interior exit stairway. Class I standpipe hose connections must be provided for each story above and below grade and must be located at an intermediate landing between stories, unless otherwise approved by the authority having jurisdiction (AHJ).

- At each horizontal exit. Class I standpipe hose connections must be provided on each side of the wall adjacent to the exit opening, unless the floor areas adjacent to the horizontal exit are reachable from an interior exit stairway hose connection by a 30-foot hose stream from a nozzle attached to 100 feet of hose.

- In every exit passageway. Class I standpipe hose connections must be provided at the entrance from the exit passageway to other areas of the building, unless the floor areas adjacent to the exit passageway are reachable from an interior exit stairway hose connection by a 30-foot hose stream from a nozzle attached to 100 feet of hose.

- In remote portions of the floor. Where the most remote portion of a sprinklered floor is more than 200 feet from a hose connection, the fire code official is authorized to require that additional hose connections be provided in approved locations.

8.4 Portable Fire Extinguishers

Portable fire extinguishers must be provided in accordance with NFPA 10 (IBC 906 and NFPA 101 Section 18.3.5.12).

8.5 Electrical Systems

The essential electrical system for electrical components, equipment, and systems must be designed and constructed in accordance with IBC Chapter 27 and NFPA 99 (IBC 407.10 and NFPA 101 Section 18.5.1.2).

9. MEANS OF EGRESS

The applicable means of egress requirements for the building are described below.

9.1 Egress Summary

See the associated Life Safety Plans for the calculated occupant loads throughout the building. The occupant loads of the building were calculated based on the occupant load factors in accordance with IBC Table 1004.1.2 and NFPA 101 Table 7.3.1.2. The capacities of the exits are calculated in accordance with IBC 1005.1 and NFPA 101 Table 7.3.3.1.

9.2 Exit Access Travel Distance

The exits are required to be arranged such that the maximum exit access travel distance is as follows (IBC 1017.2 and NFPA 101 Sections 12.2.6.2(1), 18.2.6.2.1, 38.2.6.3, & 42.2.6).

Occupancy	With Sprinkler System (feet)
A-3	250
B	300
I-2	200
S-1	250
S-2	400

The maximum travel distance allowed from a Group I-2 sleeping room to an exit access door in that room is 50 feet (IBC 407.4.2 and NFPA 101 Section 18.2.6.2.3).

Refer to the associated Life Safety Plans to note travel distance compliance.

9.3 Corridor Width

Corridors must provide the following minimum clear widths (IBC 1020.2 and NFPA 101 Section 18.2.3.4 & 38.2.3.2):

- 96 inches where serving bed movement areas;
- 44 inches in other areas where the occupant load is 50 or more; and
- 36 inches in other areas where the occupant load is less than 50 people.

Where corridors are required to be 96 inches, the following projections are permitted by NFPA 101 Section 18.2.3.4:

- Projections into the required width are permitted for wheeled equipment, provided all of the following conditions are met:
  - The wheeled equipment does not reduce the required clear unobstructed corridor width to less than 60 inches
  - The health care occupancy fire safety plan and training program address the relocation of the wheeled equipment during a fire or similar emergency
  - The wheeled equipment is limited to the following: equipment in use and carts in use, medical emergency equipment not in use, and patient lift and transport equipment

- Projections into the required width are permitted for fixed furniture, provided all of the following conditions are met:
  - The fixed furniture is securely attached to the floor or to the wall
  - The fixed furniture does not reduce the clear unobstructed corridor width to less than 6 feet
  - The fixed furniture is located only on one side of the corridor
  - The fixed furniture is grouped such that each grouping does not exceed an area of 50 sf
  - The fixed furniture groupings are separated from each other by a distance of at least 10 ft
  - The fixed furniture is located so as to not obstruct access to building service and fire protection equipment
  - Corridors throughout the smoke compartment are protected by an electrically supervised automatic smoke detection system, or the fixed furniture spaces are arranged and located to allow direct supervision by the facility staff from a nurses' station or similar space.

Since the IBC does not address corridor projections for I-2 Condition 2 occupancies, we recommend reviewing any proposed projections with the building official for approval.

The exit access must be arranged such that dead ends do not exceed 20 feet in corridors serving Group I-2 and A-3 occupancies and do not exceed 50 feet in corridors serving other occupancies (IBC 1020.4 and NFPA 101 Sections 38.2.5.2.1 & 42.2.5).

9.4 Number of Exits and Continuity

Two means of egress must be provided from individual spaces where the occupant load and/or common path of travel distance exceeds the limitations of IBC Table 1006.2.1 and NFPA 101 Sections 12.2.5.1.2, 38.2.5.3.1 & 42.2.5.

Spaces with One Means of Egress

Use Group	Maximum Occupant Load	Maximum Common Path of Travel Distance (ft)
A-3	49	75[A]
B	49	100
I-2	10	75
S-1, S-2	29	100

[A] The common path of travel in assembly occupancies is permitted to be 75 feet where the path serves not more than 50 occupants. Where the path serves more than 50 occupants, the common path of travel is limited to 20 feet; however, an occupant load exceeding 50 will require a second means of egress.

In addition, habitable spaces must have an exit access door leading directly to a corridor unless an exit door is provided directly to the exterior at ground level (IBC 407.4.1 and NFPA 101 Section 18.2.5.6.1).

All spaces within each story must have access to the minimum number of independent exits from the story as required by IBC Table 1006.3.1 and NFPA 101 Section 7.4.1.2 below.

Minimum Number of Exits Per Story

Occupant Load (persons per story)	Minimum Number of Exits (per story)
1-500	2
501-1,000	3
More than 1,000	4

Where more than one means of egress is required, the exits must be separated by ⅓ of the overall diagonal distance of the space served (IBC 1007.1.1 and NFPA 101 Section 7.5.1.3.2). This separation distance is measured between the doors to Stair 1 and 2. See Section 3.4 of this report for the required separation between the closest points of the stairway enclosures.

Where more than one means of egress is required, at least two accessible means of egress must be provided. Where one means of egress is permitted, at least one means of egress must be accessible (IBC 1009.1 and NFPA 101 Section 7.5.4).

9.5 Exterior Stairs

An exterior stair is proposed for Level CG, C1, and C2 and the stair will be at or very near grade. The stair provides access from the building to Gilman Street. The use of the exterior stair as a means of egress from Level CG, C1, and the green roof on C2 will likely require a compliance alternative or variance.

There are two types of exterior stairs: exterior exit stairs and exterior exit discharge stairs. Exterior exit discharge stairs are generally considered stairs that provide occupants access to grade, but only require travel on the stair for less than a story.

Exterior exit stairs are those outside stairs that require occupants to travel a story or more to reach grade. The proposed stair falls into a gray area of the code because while occupants would travel more than a story to reach street level, the stair itself would be at grade or very near grade due to the sloped site.

Since exterior exit stairs require travel for a story or more, greater protection measures are required for such stairs. Typically these stairs are not permitted in Group I-2 occupancies and/or in buildings more than six stories in height or high-rise buildings (IBC 1027.2). That being said, the height limitation is to prevent occupants from experiencing vertigo or from being afraid to use the stair. Since the stair only connects the first through third story and will be at or near grade, it complies with the intent of the code and aligns with the intent of an exit discharge stair. In addition, NFPA 101 permits the use of exterior exit stairs in hospitals (Section 18.2.2.3). Therefore, in our opinion this is a reasonable compliance alternative approach to be reviewed with the building official.

Exterior stairs must comply with the following requirements. While the stair could be considered an exit discharge stair, we recommend complying with the following as part of the compliance alternative or variance approach.

- Exterior exit stairs must be open on at least one side, except as required for structural columns, beams, handrails, and guards (IBC 1027.3 and NFPA 101 Section 7.2.2.6.6).
    - Open sides must be at least 50% open and have an aggregate open area of at least 35 SF adjacent to each floor level and the level of each intermediate landing.
    - The required open area must be located at least 42 inches above the adjacent floor or landing level.
    - The stair must be arranged to avoid impediments to its use by persons having fear of high places. Stairs more than 36 feet above the finished ground level must be provided with an opaque visual obstruction not less than 48 inches in height (NFPA 101 Section 7.2.2.6.2).
- The open areas adjoining the stair must be either yards, courts, or public ways. The remaining sides may be enclosed by the exterior walls of the building (IBC 1027.4).
- The stair must have a minimum FSD of 10 feet measured at right angles from the exterior edge of the stair to adjacent lot lines, other portions of the building, and other buildings (IBC 1027.5).
- The exterior stairway must be separated from the interior of the building as required for interior stairs. Since the proposed stair connects less than 4 stories, a 1-hour separation is required (IBC 1027.6 & 1023.2 and NFPA 101 Section 7.2.2.6.3.1).
    - The 1-hour separation must extend horizontally for at least 10 feet beyond the stair and vertically from finished ground level to a point 10 feet above the topmost landing of the stair, or to the roofline (whichever is less) (NFPA 101 Section 7.2.2.6.3.2).
    - Roof construction must provide protection beneath the stairs and must extend horizontally at least 10 feet to each side of the stair (NFPA 101 Section 7.2.2.6.3.3).

- Where a vertical plane projecting from the edge of the stair and stair landing is exposed by other parts of the building by an angle less than 180 degrees, the exterior wall must be rated in accordance with IBC 1023.7. See section 6.2 of this report.
- All openings below the stair must have a ¾-hour rating where the stair is located as follows (NFPA 101 Section 7.2.2.6.4):
    - In an enclosed court with a smallest dimension that does not exceed ⅓ its height; or
    - In an alcove having a width that does not exceed ⅓ its height and a depth that does not exceed ¼ its height.
- The stair must be designed to minimize water accumulation on the walking surface (IBC 1011.7.2 and NFPA 101 Section 7.2.2.6.5).

9.6 Horizontal Exits

Horizontal exits will be provided on various levels of the building. In addition to the inpatient floors, horizontal exits will also be provided at the connection to the Bean Building for Levels B and G. Requirements for horizontal exits are as follows.

Separation

The separation between buildings or portions thereof connected by a horizontal exit must be provided by a fire wall or fire barrier (IBC 1026.1). The minimum fire-resistance rating of the separation is 2 hours, but the separation cannot be less than required by other sections of the code. The fire wall between the Congress Street building and the Visitor Garage must have a minimum 3-hour fire-resistance rating per IBC 706.4.

Horizontal exits constructed as fire barriers must be continuous from exterior wall to exterior wall so as to divide completely the floor served by the horizontal exit. In addition, where the fire barrier serving as a horizontal exit intersects exterior walls at an angle of less than 180 degrees, the exterior walls must have a 1-hour fire-resistance rating with ¾-hour rated opening protectives for a distance of at least 10 feet on both sides of the horizontal exit (IBC 1026.2 and NFPA 101 Section 7.2.4.3.). The smoke barrier/horizontal exit wall on Level C2 through C4 intersects exterior walls that are at an angle of less than 180 degrees. Therefore, exterior wall protection is required. Refer to the associated life safety plans for further details.

Opening Protectives

Fire doors in horizontal exits must be self-closing or automatic-closing when activated by a smoke detector. Doors, where located in a cross-corridor condition, must be automatic closing by smoke detector activation (IBC 2026.3 and NFPA 101 Sections 7.2.4.3.10 & 7.2.4.3.11). Doors in horizontal exits must provide a minimum 1½-hour fire-resistance rating. However, doors in 3-hour fire walls must provide a minimum 3-hour rating (IBC Table 716.5 and NFPA Table 101 8.3.4.2)

Refuge Areas & Capacity

The refuge area of a horizontal exit must be a space occupied by the same tenant or a public area. Each refuge area must be adequate to accommodate the original occupant load of the refuge area plus the occupant load anticipated from the

adjoining compartment. The anticipated occupant load from the adjoining compartment must be based on the capacity of the horizontal exit doors entering the refuge area (IBC 1026.4).

The capacity of the refuge area should be computed based on a net floor area allowance of 3 SF per occupant. The capacity of refuge areas serving Group I-2 occupants must be calculated at 15 SF per occupant for ambulatory occupancies and 30 SF per occupant for nonambulatory occupancies (IBC 1026.4.1 and NFPA 101 Section 7.2.4.2.4).

Not less than one means of egress from the area of refuge must lead directly to the exterior or to an interior exit stairway or ramp (IBC 1026.4.2).

9.7 Doors

Cross-corridor door openings in corridors required to be at least 96 inches wide must have a clear width as follows (NFPA 101 Section 18.2.3.4(6)):

- 6 feet, 11 inches for pairs of doors; and
- 41 ½ inches for a single door.

The above provisions also apply to any doors in the means of egress from the patient rooms (NFPA 101 Section 18.2.3.6). However, exit stair enclosure doors are only required to provide a minimum clear width of 32 inches (NFPA 101 Section 18.2.3.7). Since the proposed exterior stair will be serving as an exit stair, it is our opinion that the doors serving this stair are also only required to provide a minimum of 32 inches in clear width. Doors not serving bed-traffic must have a minimum clear width of 32 inches (IBC 1010.1.1 and NFPA 101 Section 7.2.1.2.3.2). All doors serving an occupant load of 50 or more people must swing in the direction of egress travel (IBC 1010.1.2 and NFPA 101 Section 7.2.1.4.2).

9.8 Locking Devices

Unless complying with IBC 1010.1.9.6 and NFPA 101 Section 18.2.2.2.5, locking devices that restrict access to a care recipient's room from the corridor and that are operable only by staff from the corridor side must not restrict the means of egress from the care recipient's room (IBC 407.4.1.1 and NFPA 101 Section 18.1.3.2(1)).

9.9 Aisles and Aisle Accessways

In assembly areas such as the Interprofessional Lounges on Level C2 and C3, aisles and aisle accessways must provide a minimum clear width between seating as summarized below.

Aisles

Aisles serving table seating on one side must have a clear width of at least 55 inches. Where seating is provided on both sides of the aisle, the aisle must have a clear width of 74 inches when serving less than 50 seats, and 80 inches when serving 50 or more

seats. The clear aisle width must be measured from the edge of the tables (IBC 1029.9.6 & 1029.12.1).

Aisle Accessways

Aisle accessways serving seating on one side must have a minimum clear width of 31 inches. Aisle accessways serving seating on both sides must have a minimum clear width of 50 inches. The clear width must be increased ½-inch for each additional foot, or fraction thereof, beyond 12 feet of aisle accessway length. No minimum width for aisle accessways having a length not exceeding 6 feet and used by a maximum of four people. The clear aisle accessway width must be measured from the edge of the tables (IBC 1029.12.1).

10. ACCESSIBILITY

Accessibility requirements for medical facilities are provided in the American's with Disabilities Act Standards (ADA). All of the patient sleeping rooms must comply with ADA 805 (ADA 223.2.2).

11. MECHANICAL

The building must be provided with mechanical ventilation in accordance with ASHRAE 62.1, 2013 edition.

12. ENERGY CONSERVATION

The building is subject to with the requirements of IECC 502, 503, and C504 or ASHRAE 90.1 – 2013 (IECC 501.2).

13. PLUMBING FIXTURES

The following table summarizes the plumbing fixtures provided in the Congress Street building. The subsequent sections discuss the analysis for each of the floors. The plumbing fixture analysis is based on the requirements of the 2015 IAPMO UPC as adopted and amended by Maine.

Floor Level[A]	Occupancy	Toilets Provided		Urinals	Lavatories Provided		Max Occupant Load Supported			Maximum Expected Occupant Load
		Male	Female		Male	Female	Male	Female	Total	
CB	Group B	1	1	0	1	1	50	15	30	11
CG	Group A-3	2	3	0	2	3	200	100	200	181
	Group I-2 - Employee	1	2	0	1	2	15	15	30	25
	Group I-2 - Patient	4 Unisex					32 patients			41[B]
C1	Group I-2 - Employee	2	3	0	2	3	35	35	70	4
C2	Group I-2 - Employee	1	2	0	1	2	15	15	30	16
	Group I-2 - Public	1	1	0	1	1	1 waiting room			1 waiting room
	Group I-2 - Patient	1 per room					32 patient rooms			32 patient rooms
C3	Group I-2 - Employee	1	2	0	1	2	15	15	30	16
	Group I-2 - Public	1	1	0	1	1	1 waiting room			1 waiting room
	Group I-2 - Patient	1 per room					32 patient rooms			32 patient rooms
B	Group I-2 - Employee	3	5	2	3	3	135	95	190	190
G	Group B	2	3	1	3	3	200	50	100	49

[A] Level C4 is not included in the table since the space is shell space and will be fit-out at a future date. Bathroom fixtures will be provided once the space is fit-out for occupancy.

[B] While the post-op suite includes 41 beds, full occupancy is not expected at one time. The toilet fixtures provided for patients have a capacity of 32 patients, which is approximately 78% of the number of beds.

13.1 LEVEL CB

On Level CB, bathrooms are provided for the IT offices located on this level as well as potential transient staff. The IT office has 11 work stations. Although the floor plans show two toilets and lavatories for each sex, it is our understanding that the number of fixtures may be reduced to one toilet per sex. Therefore, the table above only includes one toilet and lavatory per sex. These fixtures support a total staff population of 30 people. This proves sufficient to support the IT staff as well as additional capacity for transient workers. It is also our understanding that additional staff bathrooms may be provided at or near the employee entrance on Gilman Street. Since staff members are accommodated with bathrooms on other floors, these additional staff toilet rooms are not required but provided for convenience purposes for staff arriving/leaving through the staff entrance at this location. The number of plumbing fixtures provided here is subject to the design team's consideration.

13.2 LEVEL CG

A combination of staff, public, and patient restrooms are provided on this floor. The following sections discuss each population.

Staff
A total of 3 unisex staff bathrooms are provided on Level CG. These fixtures can support a maximum of 30 staff members. Approximately 25 staff workstations are shown on the plans. Therefore, the proposed fixtures provide sufficient capacity.

Public
A total of 3 unisex bathrooms and one set of individual bathrooms for each sex are provided for public use. These fixtures can support a maximum of 200 people. Approximately 181 seats are shown in the CG waiting area. Therefore, the fixtures provide sufficient capacity for the expected occupant load.

Patients
A total of 4 unisex patient bathrooms are provided on Level CG. These fixtures can support a maximum of 32 patients.

While the post op suites contains 41 patient beds, we do not expect all beds to be occupied at one time and therefore the 4 patient toilet rooms are considered sufficient since they provide for 78% of the beds to be occupied. If all beds could be occupied at one time, two additional patient bathrooms are required. We recommend reviewing the proposed layout with MMC the local plumbing inspector for approval.

13.3 LEVEL C1

Level C1 is provided with 5 unisex staff toilets that are intended to serve staff in the PACU suite. The 5 staff toilets can support a maximum of 70 employees. A total of 4 staff workstations are shown in the PACU suite. Therefore, the proposed fixtures provide sufficient capacity.

Due to the de-gowning process for operating room (OR) staff, the OR employees are expected to use the bathrooms in the locker rooms located on Level B. No patient bathrooms are provided on this floor since patients in the PACU suite and ORs will be unconscious and unable to use the restroom. Once patients become conscious, they are moved to a different floor (i.e. Stage 2) where they will have access to restrooms. Stage 2 will be either Level CG post op suite to await discharge or relocation to an inpatient room.

13.4 LEVEL C2 & C3

A combination of staff, public, and patient restrooms are provided on Level C2 and C3. The following sections discuss each population.

Staff
A total of 3 unisex staff toilet rooms are provided on each floor. These toilet rooms can support a maximum of 30 employees. Levels C2 and C3 will contain a staff to patient ratio of 1:2. Since there are 32 beds on each floor, approximately 16 employees are expected on each floor. Therefore, the proposed staff fixtures can accommodate the expected staff population as well as additional transient staff who may be on the floors temporarily such as doctors, nutritionists, etc.

Public

A total of 2 unisex toilet fixtures are provided for the waiting rooms on each floor. These fixtures provide sufficient capacity in accordance with UPC Table 422.1.

Patient

Each patient room is provided with an individual toilet room in accordance with UPC Table 422.1.

13.5 Level C4

Level C4 is not included in the plumbing fixture analysis since the space is being constructed as shell space for future fit-out. Plumbing fixtures will be provided on Level C4 at a later date as needed for the future program.

13.6 LEVEL B

Locker rooms are provided on Level B for use by OR staff. There are 19 ORs provided on Level C1 with a maximum of 6-10 employees expected in each OR. This staff count totals a maximum of 190 people. With the ORs operating at 80% capacity, the typical OR staff population is approximately 152 people. As shown in the attached summary table, proposed locker room fixtures can support both the typical (i.e. 152) and maximum (i.e. 190) expected occupant loads for the OR staff.

13.7 LEVEL G

Level G contains a staff lounge as well as serves as a public entrance to the building from the Visitor Garage. Therefore, public restrooms have been provided at this level. As shown in the table on page 26, sufficient restrooms have been provided on other floors for both the public and staff populations. Therefore, the fixtures provided on Level G are for convenience only.

The staff lounge on Level G has a calculated occupant load of 49 people and therefore qualifies as a Group B occupancy. Using the factors applicable to Group B occupancies, the proposed fixtures can support 100 people (UPC Table 422.1). This capacity is sufficient for the population of the staff lounge and provides excess capacity for transient staff and/or members of the public.

Portland Maine Yes. Google's good here.

Helen Donaldson <hcd@portlandmaine.gov>

10/23 Planning Board Meeting - Maine Med Proposal

Karen Snyder <karsny@yahoo.com> Wed, Oct 24, 2018 at 11:53 AM
Reply-To: Karen Snyder <karsny@yahoo.com>
To: Helen Donaldson <hcd@portlandmaine.gov>, Planning Board <planningboard@portlandmaine.gov>
Cc: Jeff Tarling <jst@portlandmaine.gov>

Hi Nell,

I think the Maine Med latest proposal is definitely more respectful and considerate to the residential neighborhood around Maine Med. Thanks to Maine Med working with the neighborhood organization representatives to address the residents concerns.

I just have three topics to address:

1) Even though the proposed Maine Med building on Congress is beautiful, it is also kind of sterile looking, especially with that 5 story shear concrete or granite wall next to the entrance. If Maine native trees could be planted in the multiple plant beds in front of the building instead of some low shrubs, this will provide a more "green", healthy, and calming experience to the people entering the new building when walking up Congress. Also, it will give visitors a cool canopy in the summer when it is hot against all that large expanse of concrete/granite plaza area in front of the building and also winter interest if conifers are planted. If the designers want to emulate Maine's granite/forest nature, why not embrace it and actually plant Maine's native trees (everyone loves the birch tree and spruce/hemlock) in the planter beds against the backdrop of this building? I think it would make the building look more beautiful and inviting.

2) Can there be a official confirmation that residents will continue to have snow ban parking privileges at the visitor Congress St parking garage or the St. John parking garage? If so, how many reserved spots and where?

3) I was surprised to hear the 12 mature oak trees that are on the Maine Med property close to the parking garage will be replaced with a 8 medium sized street trees called the Honey Locust. Also, I was surprised to see this tree on Portland's recommended tree list since it is not even native to Maine and climate zone. In fact, from the Portland's Recommended Street Tree list, only 1 of Portland's recommended medium street trees are actually a native to Maine as shown below. However, the recommended large street trees are mostly native to Maine... except for the Catalpa and that junk tree, gingko biloba from China.

Can someone explain to me why City of Portland Parks department isn't using trees from the Maine Native tree list as recommended Portland street trees shown in below from Maine.gov and UMaine websites? A good example is that the non-native ginko needs to be removed from this tree list because the gingko street trees planted on Munjoy Hill are stunted and provide no shade coverage at all.

http://www.portlandmaine.gov/DocumentCenter/View/1765/Recommended-Tree-List?bidId=

Portland, ME Recommended Tree List

	Medium Size Trees 25'-45'	Native to Maine	Native
1	River Birch	No	Southeastern quarter of USA
2	American or European Hornbeam	Yes	Minnesota to Ontario east to Maine, South to Texas
3	Katsuratree	No	China and Japan
4	American Yellowood	No	Southeast restricted range: from eastern North Carolina to Oklahoma, southern Missouri and Indiana to south to central Alabama
5	Turkish Filbert	No	Southeast Europe to Western Asia
6	HoneyLocust	No	Central states, southeastern South Dakota to New Orleans
7	Tupelo	No	eastern North America from the coastal Northeast USA and southern Ontario south to central Florida and eastern Texas, as well as Mexico
8	Korean Mountain Ash	No	Korea, Japan, and China
	Large Size Trees 45' +	**Native to Maine**	**Native**
1	Red Maple	Yes	https://www.maine.gov/dacf/php/pesticides/yardscaping/plants/n_trees.htm
	Amstrong Red Maple	Yes	https://www.maine.gov/dacf/php/pesticides/yardscaping/plants/n_trees.htm
	Karpick & Bowhall Red Maple	Yes	https://www.maine.gov/dacf/php/pesticides/yardscaping/plants/n_trees.htm
	Redpointe/& Red Sunset Red Mapl	Yes	https://www.maine.gov/dacf/php/pesticides/yardscaping/plants/n_trees.htm
2	Sugar Maple	Yes	https://www.maine.gov/dacf/php/pesticides/yardscaping/plants/n_trees.htm
3	Catalpa	No	it is native to **southern and southeastern Illinois**,
4	Beech	Yes	https://www.maine.gov/dacf/php/pesticides/yardscaping/plants/n_trees.htm
5	Ginkgo Biloba	No	China
6	Tuliptree	Possibly	But not on the Maine.gov Native Tree List
7	Cucumber Magnolia	Possibly	But not on the Maine.gov Native Tree List

The native Maine trees are listed on UMaine and Maine.gov websites...

https://extension.umaine.edu/publications/2500e/

https://www.maine.gov/dacf/php/pesticides/yardscaping/plants/n_trees.htm

Regards,
Karen Snyder
Gilman St Property Owner

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1K

MMC Workshop Nov 13 Questions

stjohnvalleyneighborhood <stjohnvalley@live.com> Nov 13, 2018 2:36 PM
Posted in group: **Planning Board**

Dear Planning Board Member,

Please inquire of the Planning Department at tonight's workshop why the high crash intersection (per MDOT statistics) of A and Valley Street has not been included in the traffic study that is to be included in the TMP for phase three of the MMC expansion.

Please also ask for clarification as to how the city arrived at the conclusion that the new garage (Phase II) will not "generate" new passenger vehicle trips and therefore a TMP was not required prior to the project being allowed to commence.

The lot where the new garage is being built to hold 2,400 parking spots previously provided parking for about 800 vehicles.

If the new garage isn't generating these 1,600 new spots then what is?

While I understand the city has delegated review authority pertaining to traffic movement permitting, it is also my understanding that they need to follow the MDOT standards in deciding to pursue or not pursue a TMP for a project.

Several intersections in our neighborhood that will be impacted by the new garage are considered high crash intersections by MDOT. These intersections would have been more closely scrutinized had the city sought a TMP prior to the start of construction of the new garage.

Perhaps the process of filing a TMP would have revealed the need for an automated traffic light at one of the several high crash intersection or the need to redirect the routes the shuttle buses will be taking.

At the very least, the TMP for Phase III needs to broaden the scope of review of traffic impact generated by all three Phases of expansion to a two mile radius and include all intersections classified as "high crash" by MDOT.

Thank you,

Tim McNamara

251 Valley Street

Portland

Comments re: MMC 22 Bramhall site plan

Christian MilNeil <c.neal.milneil@gmail.com> Dec 15, 2018 5:37 PM
Posted in group: **Planning Board**

To the planning board and staff,

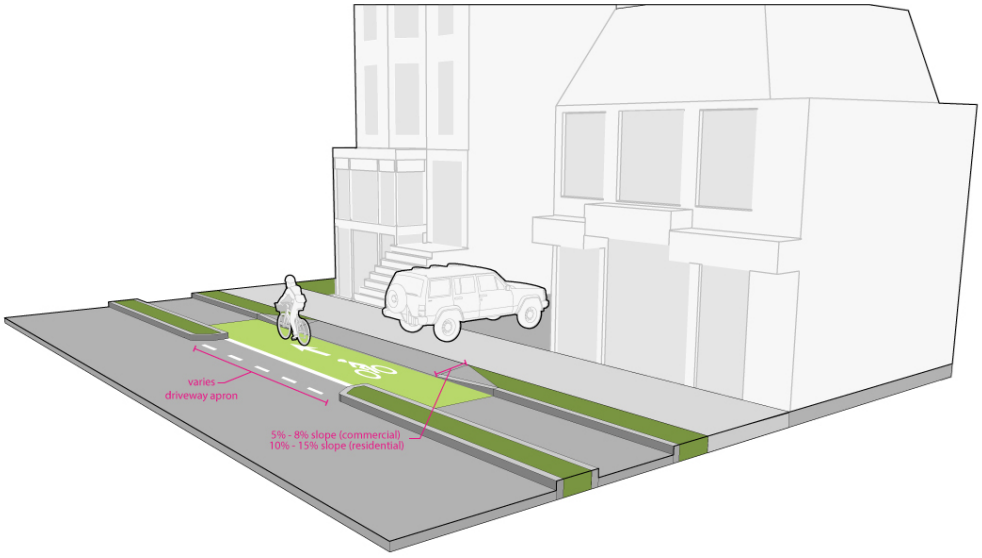
Thanks for all your work in improving the MMC site plan over the past couple of months, and I'd also like to express my appreciation to MMC for what appears to be an earnest commitment to quality design.

I support this project but I have a couple of comments and suggestions about the application, mostly with respect to maximizing the project's potential to replace excessive car traffic with more pedestrian, transit and bike trips instead:

- Overall I think this proposal will be a strong net positive to the lower Congress Street area, replacing a dark and looming garage with an attractive, engaging building and an inviting, pedestrian-oriented entrance plaza.
- I'd like to take note two details in the TDM plan: first, that currently under 3% of the hospital's 4,400 employees walk, bike or ride the bus to work; however, 8% of employees live under a mile away, and 27% of employees (over 1,500 workers) live under 3 miles (a reasonable biking distance) away.

  So there's a strong potential for MMC to invite more employees to get to work by alternative means and remove dozens of cars from the neighborhood's streets during rush hours here.
- I appreciate and agree with the planning staff's insistence on making sure Gilman Street has sidewalks on both sides of the street – with the new addition, Gilman will be a busy pedestrian route and deserves to be as complete as other city streets in the neighborhood.
- I also strongly endorse the addition of a climbing bike lane up Congress Street. This is a very frequently used bike route – essentially the main entrance to the peninsula for cyclists arriving from the west, including from the Portland Transportation Center.
- However, I am concerned about the bike lane's interactions with potentially high volumes of right-turning traffic entering and exiting the main entrance loop and the visitors garage. These conflict points raise the possibility of right-hook crashes, where turning cars don't look for bikes using the lane to their right.

  In those driveway crossings, I'd like to suggest the city and the applicant look into using high-visibility conflict zone markings, similar to markings that have been installed on Park Avenue, at the Exit 6 ramps and on Commercial Street at the Beach Street intersection (this image is from the City of Seattle's Right-of-Way Improvements Manual):



- The signage and wayfinding plan seems predominantly focused on motorists – in contradiction of the MMC's TDM goals to encourage more pedestrian, transit and bike trips. Perhaps the signage plan should include more wayfinding ideas to direct visitors and staff to/from the METRO bus shelters and the on-site bike parking areas.

  Ideally, the City of Portland should also think about implementing its own bike route wayfinding plans throughout this neighborhood, especially now that the city's made significant improvements to bike routes in the area.

Christian MilNeil
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double u double u double u dot christianmilneil dot com

EASEMENT, ENCUMBRANCE, AND AGREEMENT REFERENCES:

A. UNDERGROUND ANCHOR SYSTEM EASEMENT RESERVED BY MMC IN CONVEYANCE TO CRESCENT HEIGHTS LLC IN DEED BOOK 26288 PAGE 49.
B. UTILITY/DRAINAGE EASEMENT FOR A DRAIN/SEWER PIPE FROM THE PROPERTY NOW OF CRESCENT HEIGHTS, LLC. FORMERLY AS DESCRIBED IN DEED BOOK 1938 PAGE 248 AND 1946 PAGE 370.
C. UTILITY EASEMENT: TO NET&T NEAR THE NORTHERLY CORNER OF THE PARKING GARAGE ON CONGRESS ST. PER DEED BOOK 8573 PAGE 121.
D. CERTIFICATE OF VARIANCE APPROVAL GRANTING RELIEF FROM SECTION 14-137(7) MAXIMUM STRUCTURE HEIGHT OF 45 FEET, DATED JUNE 25, 1996, AND RECORDED IN DEED BOOK 12629 PAGE 295.
E. SITE LOCATION OF DEVELOPMENT DEPARTMENT ORDER BY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION FOR MAINE MEDICAL CENTER, PER DEED BOOK 13919 PAGE 114.
F. UTILITY EASEMENT: MMC TO NET&T 6' X 8' NEAR GILMAN AND CONGRESS PER DEED BOOK 13027 PAGE 207.
G. AMENDMENT TO CITY CODE SEC. 14-49 (ZONING MAP AMENDMENT) RE: CONDITIONAL REZONING FOR PROPERTY IN VICINITY OF WESTERN PROMENADE/MAINE MEDICAL CENTER. DATED MAY 24, 2005 AND RECORDED IN DEED BOOK 22671 PAGE 60.

GENERAL NOTES

1. THE RECORD OWNERS OF THE SURVEYED PROPERTIES ARE AS FOLLOWS:
MAINE MEDICAL CENTER AND MMC REALTY CORPORATION AS DESCRIBED IN DEED BOOK/PAGES:

11613/153	1250/470	1282/323	1285/450	1289/192	1290/192	1296/351	1296/352
13504/86	14026/287	1575/227	16145/275	18032/68	19986/204	2127/269	2127/320
2127/443	2133/310	2133/311	2133/317	2143/330	2147/110	2149/190	22762/45
2301/21	2308/161	2349/229	2619/499	2685/369	2901/326	2951/927	2955/722
2988/139	3075/669	3095/34	3097/244	3108/396	3183/576	3187/234	3188/710
3278/209	3310/115	3310/116	377/296	377/297	378/6	381/260	382/450
384/37	388/92	3995/53	408/457	6177/319	8309/5	8855/81	9392/344
9722/45							

* ALL RECORDED INFORMATION LISTED HEREON IS WITHIN THE CUMBERLAND COUNTY REGISTRY OF DEEDS (CCRD).

2. THE PROPERTIES ARE SHOWN ON THE CITY OF PORTLAND TAX MAPS AS FOLLOWS:
MAP 53 BLOCK D, LOT 7,
MAP 53 BLOCK E, LOT 13
MAP 54 BLOCK H, LOT 1,
MAP 64 BLOCK C, LOT 1.

3. BOUNDARY INFORMATION SHOWN HEREON IS BASED UPON ON GROUND SURVEY PERFORMED BY SEBAGO TECHNICS FROM 2001 THROUGH 2009 WITH RESEARCH UPDATES THROUGH FALL OF 2017.

4. THE BEARINGS SHOWN HEREON ARE BASED UPON THE MAINE STATE PLANE COORDINATE GRID, WEST ZONE 1802 ON NAD83 IN US SURVEY FEET. THE VERTICAL DATUM WAS ESTABLISHED IN 2001 BASED UPON GPS OBSERVATIONS. IN 2018 LEVEL RUNS WERE PERFORMED FROM 2 CITY BENCHMARK MONUMENTS (MF 126 AT THE NORTHEAST CORNER OF VALLEY STREET AND A STREET, AND MF 128 AT THE NORTHEAST INTERSECTION OF SAINT JOHN STREET AND C STREET). THE ORIGINAL CONTROL WAS FOUND TO BE 0.13' ABOVE THE CITY DATUM. THE ORIGINAL CONTROL HAS BEEN HELD FOR THIS PROJECT. TO CONVERT ANY ELEVATIONS SHOWN HEREON TO THE CITY DATUM SUBTRACT 0.13 FEET.

5. UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED UPON FIELD LOCATION OF VISIBLE SURFACE FEATURES, INVERT INSPECTIONS, UTILITY MARKINGS BY DIGSMART OF MAINE, AND PLANS REFERENCED HEREON. THE INFORMATION SHOWN HEREON MAY NOT INCLUDE ALL UTILITIES. PRIOR TO ANY CONSTRUCTION DIGSAFE AND APPROPRIATE UTILITY PROVIDERS MUST BE CONTACTED.

6. THE RIGHT OF WAY LINES ON THE STREETS ABUTTING THE LOCUS PROPERTIES SHOWN HEREON WERE ESTABLISHED UTILIZING CITY PUBLIC WORKS RECORDS AND FOUND MONUMENTATION AT THE CORNERS AND ANGLE POINTS OF THE STREETS.

7. SEE DESIGN UTILITY PLANS FOR STORM DRAIN AND SEWER STRUCTURE RIM AND INVERT ELEVATIONS. ELEVATIONS ARE BASED ON DATUM DESCRIBED IN NOTE 4.

PLAN REFERENCES

1. STATE OF MAINE DEPARTMENT OF TRANSPORTATION PLAN SHOWING VALLEY, CONGRESS, AND ST. JOHN STREETS, CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS FILE NO. 726 / 16.
2. STANDARD BOUNDARY SURVEY FOR MAINE MEDICAL CENTER BY STEVENS, MORTON, ROSE, & THOMPSON, INC. DATED OCTOBER 06, 1990 RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 188, PAGE16.
3. CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS LAND SWAP WITH MAINE MEDICAL CENTER (GILMAN ST. & ARSENAL ST.) DATED JANUARY 23, 1974. DPW FILE NO. 547 / 20.
4. PLAN OF LAND OF J.M. WOOD ESQ. ELLSWORTH AND O STREETS DPW FILE NO. 361 / 3.
5. PLAN OF LAND SURVEYED FOR MOODY F. WALKER SEPTEMBER 23, 1863 BY HOWE & OSGOOD C.E. CCRD PLAN BOOK 21, PAGE 36.
6. SITE PLAN OF NEUROSCIENCE INSTITUTE CONGRESS AND GILMAN ST. PORTLAND MAINE BY GREGORY K. JOHNSON AIA DATED JULY 31, 1987 ON FILE WITH THE DPW.
7. PLAN OF PROPOSED WIDENING CONGRESS STREET AUGUST 1885, DPW FILE NO. 360 / 2.
8. CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS, B ST. WIDENING DATED NOV.4, 1937 DPW FILE NO. 569 / 9.
9. PLAN OF CITY LANDS BETWEEN GILMAN STREET AND MAINE CENTRAL RAILROAD SOUTH OF CONGRESS STREET, DPW FILE NO. 18 / 4.
10. PLAN OF CITY LAND BETWEEN CONGRESS AND "A" STS DATED 1883 DPW FILE NO. 379 / 10.
11. CITY OF PORTLAND PLAN OF "B" VALLEY ST DATED FEB. 1926 DPW FILE. NO.179.
12. CITY OF PORTLAND, DEPARTMENT OF PUBLIC WORKS ARSENAL STREET DISCONTINUANCE DATED APRIL 15, 1953 DPW FILE NO. 410 / 96.
13. MMC PARKING FACILITY PROPOSED GRADING PLAN DATED 29 MAY 1971 BY TAC, DPW FILE NO. 680 / 4.
14. CITY OF PORTLAND DEPARTMENT OF PUBLIC WORKS WESTERN PROMENADE SLOPE, CITY BOUNDARY BETWEEN GILMAN AND "B" ST. DATED JAN. 4,1933 DPW FILE NO. 462 / 32 AND 462 / 32-A.
15. PLAN OF LAND WEST OF THE BRACKETT LINE CHADWICK AND VAUGHN STREETS, DATED 12 JUNE 1833 RECORDED IN CCRD PLAN BOOK 1, PAGE 1, DPW FILE NO. 462 / 4.
16. PLAN OF CITY LANDS BETWEEN GILMAN AND "B" STREETS DATED MAY 1883, DPW FILE NO. 69 / 4R, CCRD PLAN BOOK 4, PAGE 43.
17. WESTERN PROMENADE DATED JAN. 1926 CITY OF PORTLAND DPW SHEET NO. 7 FILE NO. 142.
18. CITY OF PORTLAND WORK SHEET CONGRESS, ARSENAL, AND BRACKETT STREETS DPW FILE NO. 363 / 11.
19. CITY OF PORTLAND, PLAN SHOWING PROPOSED GILMAN STREET, CONGRESS AND ASH STREETS, DPW FILE NO. 365 / 6.
20. CITY OF PORTLAND PLAN SHOWING GILMAN STREET, CONGRESS ST. AND WESTERN PROMENADE, DPW FILE NO. 365 / 7.
21. PLAN OF CITY LAND BETWEEN GILMAN & "B" STREETS DATED MAY 1883, CCRD PLAN BOOK 4, PAGE 43, DPW FILE NO. 379 / 25.
22. PORTLAND WATER DISTRICT, MAP NO. 7 SHOWING MAINE MEDICAL CENTER AREA.
23. CITY OF P D PLAN SHOWING CONGRESS STREET SHEET NO. 3 DPW FILE NO. 150.ORTLAN
24. CITY OF PORTLAND PLAN SHOWING GILMAN STREET DATED FEB 1926 DPW FILE NO. 178.
25. CITY OF PORTLAND PROPERTY PLAN BOOK NO. 274 SHOWING PROPOSED TAKING FROM MAINE MEDICAL CENTER ON CHARLES STREET DATED NOVEMBER 29, 1973.
26. CITY OF PORTLAND PLAN OF BRAMHALL ST., VAUGHAN ST., AND BRACKETT ST. DATED OCT. 1925 DPW FILE NO. 90.
27. STANDARD BOUNDARY SURVEY AT 25-27 ELLSWORTH STREET MADE FOR MAINE MEDICAL CENTER BY OWEN HASKELL, INC. DATED OCT. 14, 2002 ON FILE WITH SEBAGO TECHNICS,INC.
28. CITY OF PORTLAND MAINE DEPARTMENT OF PUBLIC WORKS, CHARLES ST. AS BUILT PLAN DATED 1973 DPW FILE NO. 495 / 7.
29. CITY OF PORTLAND MAINE DEPARTMENT OF PUBLIC WORKS, WESCOTT ST. AS BUILT PLAN DATED 1973 DPW FILE NO. 495 / 6.
30. CITY OF PORTLAND MAINE DEPARTMENT OF PUBLIC WORKS, HILL ST. AS BUILT PLAN DATED 1973 DPW FILE NO. 495 / 5.
31. CITY OF PORTLAND MAINE DEPARTMENT OF PUBLIC WORKS, HILL ST. AS BUILT PLAN DATED 1973 DPW FILE NO. 495 / 5.
32. CITY OF PORTLAND MAINE DEPARTMENT OF PUBLIC WORKS, ELLSWORTH ST. AS BUILT PLAN DATED 1973 DPW FILE NO. 495 / 2.
33. CITY OF PORTLAND MAINE DEPARTMENT OF PUBLIC WORKS, CRESCENT ST. AS BUILT PLAN DATED 1973 DPW FILE NO. 495 / 3.
34. STREET VACATION / ACCEPTANCE AND LAND TRANSFER PLAN OF MAINE MEDICAL CENTER BY SEBAGO TECHNICS, INC AS REVISED THROUGH JULY 5, 2005 DPW FILE NO. 992 / 3.
35. STANDARD BOUNDARY SURVEY ON CONGRESS AND ELLSWORTH STREETS, PORTLAND MAINE BY DESLAURIERS & ASSOCIATES DATED AUGUST 30, 1999.
36. STANDARD BOUNDARY SURVEY AT 26-28 ELLSWORTH STREET MADE FOR MAINE MEDICAL CENTER BY OWEN HASKELL, INC. DATED OCT. 14, 2002 ON FILE WITH SEBAGO TECHNICS, INC.
37. EXISTING CONDITIONS & STANDARD BOUNDARY SURVEY MAINE MEDICAL CENTER DATED MAY 1, 1996 BY TITCOMB ASSOCIATES.
38. PLAN OF CRESCENT STREET DATED OCT. 1886 BY PORTLAND CITY ENGINEER DPW FILE NO.10 / 02.
39. CITY OF PORTLAND PLAN OF BRAMHALL ST., ELLSWORTH ST., AND CHARLES ST. DATED OCT. 1926 DPW FILE NO. 158..
40. PLAN OF STREETS ON BRAMHALL'S HILL SEPTEMBER 1858 BY A.P. MARSHALL CITY ENGINEER DPW FILE NO. 359 / 22.
41. PLAN OF LAND OR LOTS WEST OF THE BRACKETT ESTATE DATED 1835, DPW FILE NO.134 / 2.
42. PLAN NO. 5 SHOWNG STREETS ON BRAMHALL'S HILL SURVEYED MAY 1862 BY C.R. GOODELL C.E. DPW FILE NO. / 15.
43. CITY OF PORTLAND PLAN SHOWING ARSENAL STREET DATED OCT 1925, DPW FILE NO. 95.
44. PLAN OF LAND OR LOTS WEST OF THE BRACKETT ESTATE DATED 1835, DPW FILE NO.396 / 17..
45. PLAN OF CHANGE IN LINE OF CONGRESS STREET, DPW FILE NO. 360 / 25.
46. PLAN OF CHANGE IN LINE OF CONGRESS STREET, DATED OCTOBER 1854, DPW FILE NO. 360 / 27.
47. PLAN OF J.B. BROWN'S LAND WEST OF BRAMHALL'S HILL MADE BY WM. S. EDWARDS C.E. DATED 1871ON FILE IN THE DPW OFFICE.
48. CITY OF PORTLAND MAINE DEPARTMENT OF PUBLIC WORKS, ARSENAL ST. DISCONTINUANCE PLAN DATED 12/2/41 ON FILE IN DPW OFFICE.
49. THIS PLAN OF A TOWN ON BRAMHALL'S HILL PORTLAND MAINE AT THE REQUEST OF WILLIAL VAUGHAN, THE PROPRIETOR COMPLETED IN 1813 BY PELEG WADSWORTH, SURVEYOR, DPW FILE NO. 404 / 130, CCRD PLAN BOOK 37, PAGE 12.
50. T.F. CHAPPELL C.E. PLAN OF ASH STREET, ARSENAL ST., CONGRESS ST.
51. PARKING AREA ON BRAMHALL RESERVOIR SITE CHADWICK, BRAMHALL AND VAUGHAN STS. DATED 1964 DPW FILE NO. 698 / 14.
52. MAINE MEDICAL CENTER PKG C- SITE UTILITIES EXISTING CONDITIONS PLAN DATED THROUGH 05/25/05 BY THE RICHIE ORGANIZATION.
53. MAINE MEDICAL CENTER, PORTLAND MAINE BEAN BUILDING SITE UTILITIES AT ER. BY SHEPLEY, BULFINCH, RICHARDSON, & ABBOTT, DATED THROUGH 3/28/97.
54. BOUNDARY SURVEY OF SPORTSMANS LOT FOR MAINE MEDICAL CENTER, BY SEBAGO TECHNICS, INC., DATED THROUGH 10/23/09.
55. EXISTING CONDITIONS PLAN OF EAGLES CLUB BLOCK FOR MAINE MEDICAL CENTER, BY SEBAGO TECHNICS, INC., DATED THROUGH 11/3/09.

MATTHEW W. EK PLS 2117

STATE OF MAINE · MATTHEW W. EK · 2117 · PROFESSIONAL LAND SURVEYOR

DRAWN	CHECKED
TSL	MWE

REV:	BY:	DATE:	STATUS:
C	MWE	11/27/18	RESPOND TO CITY COMMENTS
B	MWE	12/14/17	SUBMITTED FOR CITY REVIEW
A	MWE	12/23/09	SUBMITTED FOR CLIENT REVIEW

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75 John Roberts Rd.
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South Portland, ME 04106
Tel. 207-200-2100

EXISTING CONDITIONS SURVEY
OF:
MAINE MEDICAL CENTER CAMPUS
GILMAN ST, CONGRESS ST, BRAMHALL ST, ET.AL
PORTLAND, MAINE

RECORD OWNER:
SEE NOTE 1, SHEET 2

MAINE MEDICAL CENTER
22 BRAMHALL ST
ADDRESS 2

PROJECT NO.	SCALE
15466	NTS

SHEET 2 OF 8

15466SC.dwg T-AB: ECO2



MATTHEW W. EK PLS 2117

STATE OF MAINE
MATTHEW W. EK
2117
PROFESSIONAL LAND SURVEYOR

DRAWN	CHECKED
TSL	MWE

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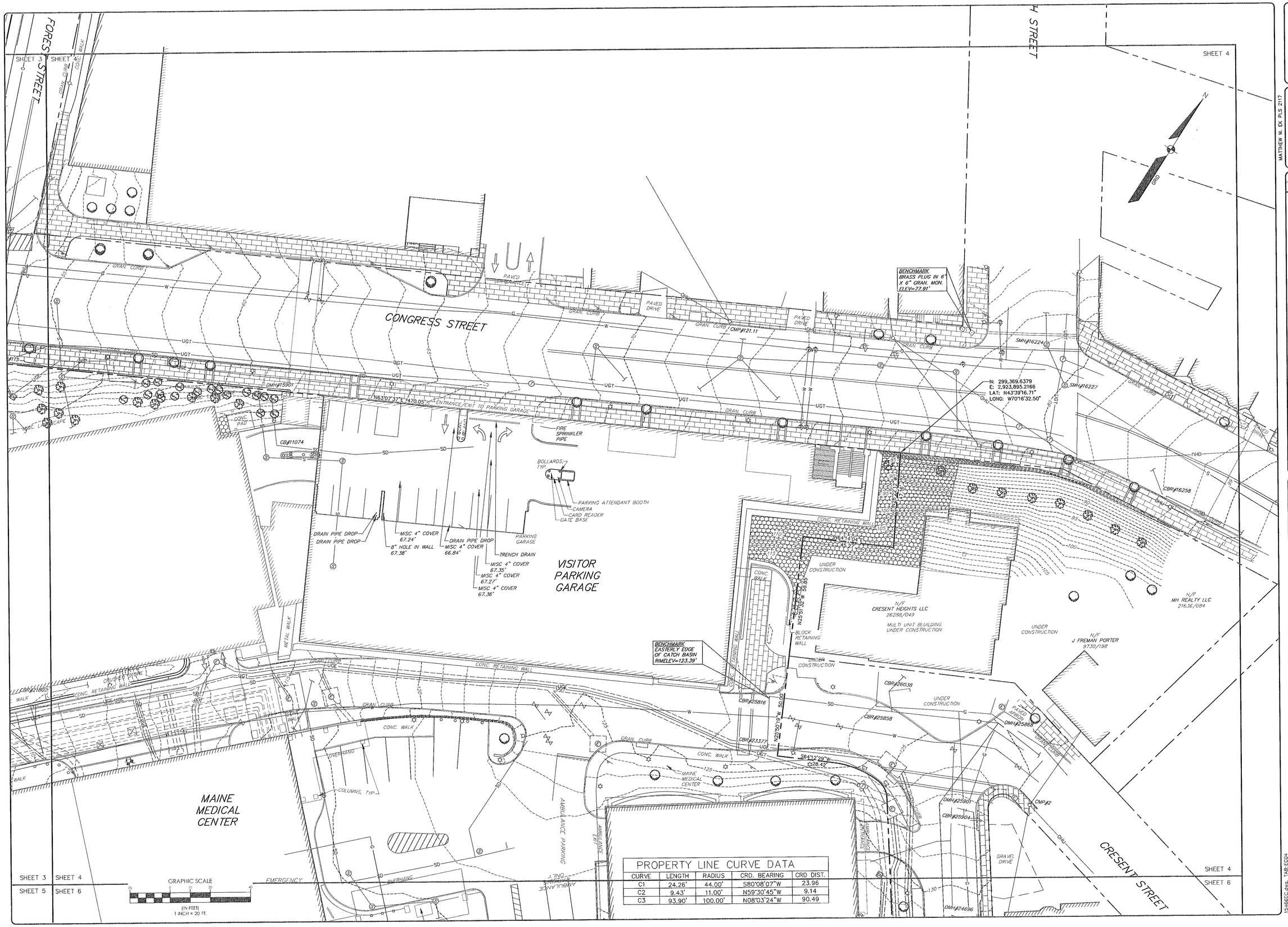
EXISTING CONDITIONS SURVEY
OF:
MAINE MEDICAL CENTER CAMPUS
GILMAN ST, CONGRESS ST, BRAMHALL ST, ET.AL
PORTLAND, MAINE
FOR:
MAINE MEDICAL CENTER
22 BRAMHALL ST
ADDRESS 2

RECORD OWNER:
SEE NOTE 1, SHEET 2

PROJECT NO.	SCALE
PROJ. NO.	1" = 20'

SHEET 3 OF 8

15466EC.dwg, TAB:EC03



PROPERTY LINE CURVE DATA

CURVE	LENGTH	RADIUS	CRD. BEARING	CRD DIST.
C1	24.26'	44.00'	S80°08'07"W	23.96
C2	9.43'	11.00'	N59°30'45"W	9.14
C3	93.90'	100.00'	N08°03'24"W	90.49

MATTHEW W. EK PLS 2117

STATE OF MAINE
MATTHEW W. EK
2117
PROFESSIONAL LAND SURVEYOR

DRAWN	CHECKED
TSL	MWE

REV:	BY:	DATE:	STATUS:
C	MWE	11/27/18	RESPOND TO CITY COMMENTS
B	MWE	12/14/17	SUBMITTED FOR CITY REVIEW
A	MWE	12/23/09	SUBMITTED FOR CLIENT REVIEW

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EXISTING CONDITIONS SURVEY

OF:
MAINE MEDICAL CENTER CAMPUS
GILMAN ST, CONGRESS ST, BRAMHALL ST, ET.AL
PORTLAND, MAINE

FOR:
MAINE MEDICAL CENTER
22 BRAMHALL ST
ADDRESS 2

RECORD OWNER:
SEE NOTE 1, SHEET 2

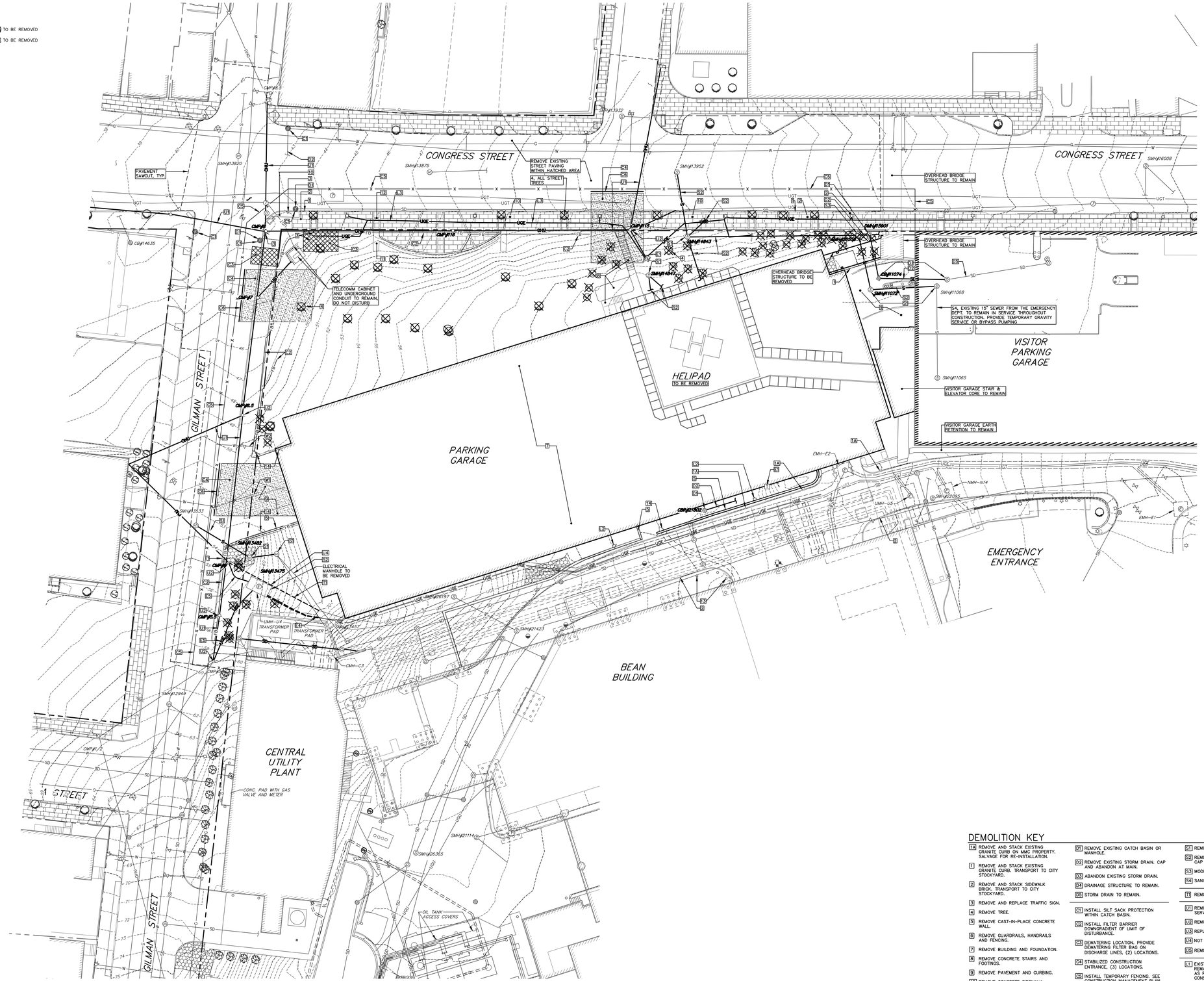
PROJECT NO.	SCALE
15466	1" = 20'

15466EC.dwg, TAB:EC04

SHEET 4 OF 8

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	BUILDING	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	CURB LINE	
--420-- --118--	CONTOURS	
×120.00	SPOT GRADE	
	RETAINING WALL	
	DECIDUOUS TREE	TO BE REMOVED
	CONIFEROUS TREE	TO BE REMOVED
	SIGN	
G	GAS	
	GAS GATE VALVE	
	GAS METER	
G	GAS MANHOLE	
W	WATER	
	WATER GATE VALVE	
	WATER SHUT OFF	
	HYDRANT	
W	WATER MANHOLE	
S	SANITARY SEWER	
S	SANITARY MANHOLE	
SD	STORM DRAIN	
UD	UNDER DRAIN	
D	DRAINAGE MANHOLE	
	CATCH BASIN	
OHU	OVERHEAD UTILITY	
UGU	UNDERGROUND UTILITY	
T	TRANSFORMER PAD	
E	ELECTRICAL MANHOLE	
T	TELEPHONE MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	
	RIPRAP	
	INLET PROTECTION	



GRAPHIC SCALE

(IN FEET)
1 INCH = 20 FT.

DEMOLITION KEY

- 1A REMOVE AND STACK EXISTING GRANITE CURB ON MMC PROPERTY. SALVAGE FOR RE-INSTALLATION.
- 1 REMOVE AND STACK EXISTING GRANITE CURB. TRANSPORT TO CITY STOCKYARD.
- 2 REMOVE AND STACK SIDEWALK BRICK. TRANSPORT TO CITY STOCKYARD.
- 3 REMOVE AND REPLACE TRAFFIC SIGN.
- 4 REMOVE TREE.
- 5 REMOVE CAST-IN-PLACE CONCRETE WALL.
- 6 REMOVE GUARDRAILS, HANDRAILS AND FENCING.
- 7 REMOVE BUILDING AND FOUNDATION.
- 8 REMOVE CONCRETE STAIRS AND FOOTINGS.
- 9 REMOVE PAVEMENT AND CURBING.
- 10 REMOVE CONCRETE SIDEWALK.
- 11 REMOVE AND STACK GRANITE SEAT WALL BLOCKS.
- 12 REMOVE AND STACK GRANITE PAVERS AT TREE WELLS AND SIDEWALK.
- 13 REMOVE BOLLARDS.

- D1 REMOVE EXISTING CATCH BASIN OR MANHOLE.
- D2 REMOVE EXISTING STORM DRAIN. CAP AND ABANDON AT MAIN.
- D3 ABANDON EXISTING STORM DRAIN.
- D4 DRAINAGE STRUCTURE TO REMAIN.
- D5 STORM DRAIN TO REMAIN.

- C1 INSTALL SILT SACK PROTECTION WITHIN CATCH BASIN.
- C2 INSTALL FILTER BARRIER DOWNGRADIENT OF LIMIT OF DISTURBANCE.
- C3 DEWATERING LOCATION. PROVIDE DEWATERING FILTER BAG ON DISCHARGE LINES, (2) LOCATIONS.
- C4 STABILIZED CONSTRUCTION ENTRANCE, (3) LOCATIONS.
- C5 INSTALL TEMPORARY FENCING. SEE CONSTRUCTION MANAGEMENT PLAN, TYP., GILMAN AND CONGRESS ST.
- C6 30' ROLLING GATE, TYP. (3) LOCATIONS. SEE CONSTRUCTION MANAGEMENT PLAN.

- W1 RETIRE EXISTING 6" FIRE SERVICE.
- W2 RETIRE EXISTING 1" DOMESTIC SERVICE.

- S1 REMOVE SANITARY MANHOLE.
- S2 REMOVE EXISTING SANITARY SEWER. CAP AND ABANDON AT MAIN.
- S3 MODIFY SEWER MANHOLE TO REMAIN
- S4 SANITARY SEWER TO REMAIN.

- T1 REMOVE MMC TELECOMM CONDUIT.

- U1 REMOVE OVERHEAD UTILITIES AND SERVICES.
- U2 REMOVE UTILITY POLE AND GUY.
- U3 REPLACE UTILITY POLE AND GUY.
- U4 NOT USED
- U5 REMOVE A/C UNIT.

- L1 EXISTING STREET LIGHTING TO REMAIN. REMOVE, STORE AND RESET AS REQUIRED FOR NEW CONSTRUCTION.
- L2 REMOVE STREET LIGHT AND BASE.
- L3 UNDERGROUND LIGHTING CONDUIT TO REMAIN.

- E1 REMOVE & REPLACE ELECTRICAL METER AND SERVICE FOR STREET LIGHTING.
- E2 REMOVE ELECTRICAL/TELECOMM SERVICE ENTRANCES.
- E3 REMOVE ELECTRICAL MANHOLE.
- E4 REMOVE ELECTRICAL DUCT BANK TO CUT IN LOCATION. SEE SHEET C11-01.
- E5 REMOVE ELECTRICAL CONDUIT/DUCT BANK POLE #5 TO MANHOLE.

PERKINS + WILL
225 Franklin Street, Suite 1100
Boston, MA 02110
t 617.478.0300
f 617.478.0321
www.perkinswill.com

CLIENT

Maine Medical Center
MaineHealth

Maine Medical Center
22 Bramhall Street
Portland, ME 04102

CONSULTANTS

CIVIL/ LANDSCAPE ARCHITECT
Sebago Technics Inc.
75 John Roberts Road, Suite 1A,
South Portland, ME 04106

STRUCTURAL ENG/ BUILDING ENVELOPE CONSULTANT
Simpson Gumpertz & Heger Inc.
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COST ESTIMATOR
D.G. Jones International
3 Baldwin Green Common,Suite 202, Woburn, MA 01801

MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

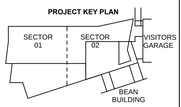
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

STATE OF MAINE — DANIEL L. RILEY — No. 9999 — REGISTERED PROFESSIONAL ENGINEER — 11-27-18

KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

1 - NOT USED
2 - CONGRESS STREET
3 - VISITOR GARAGE
4 - EAST TOWER
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



TRUE NORTH

RESUBMIT TO CITY
NOVEMBER 27, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL/MAM
Checked	DLR
Approved	DLR

TITLE

DEMOLITION PLAN CONGRESS STREET EXPANSION

SHEET NUMBER

C04-01

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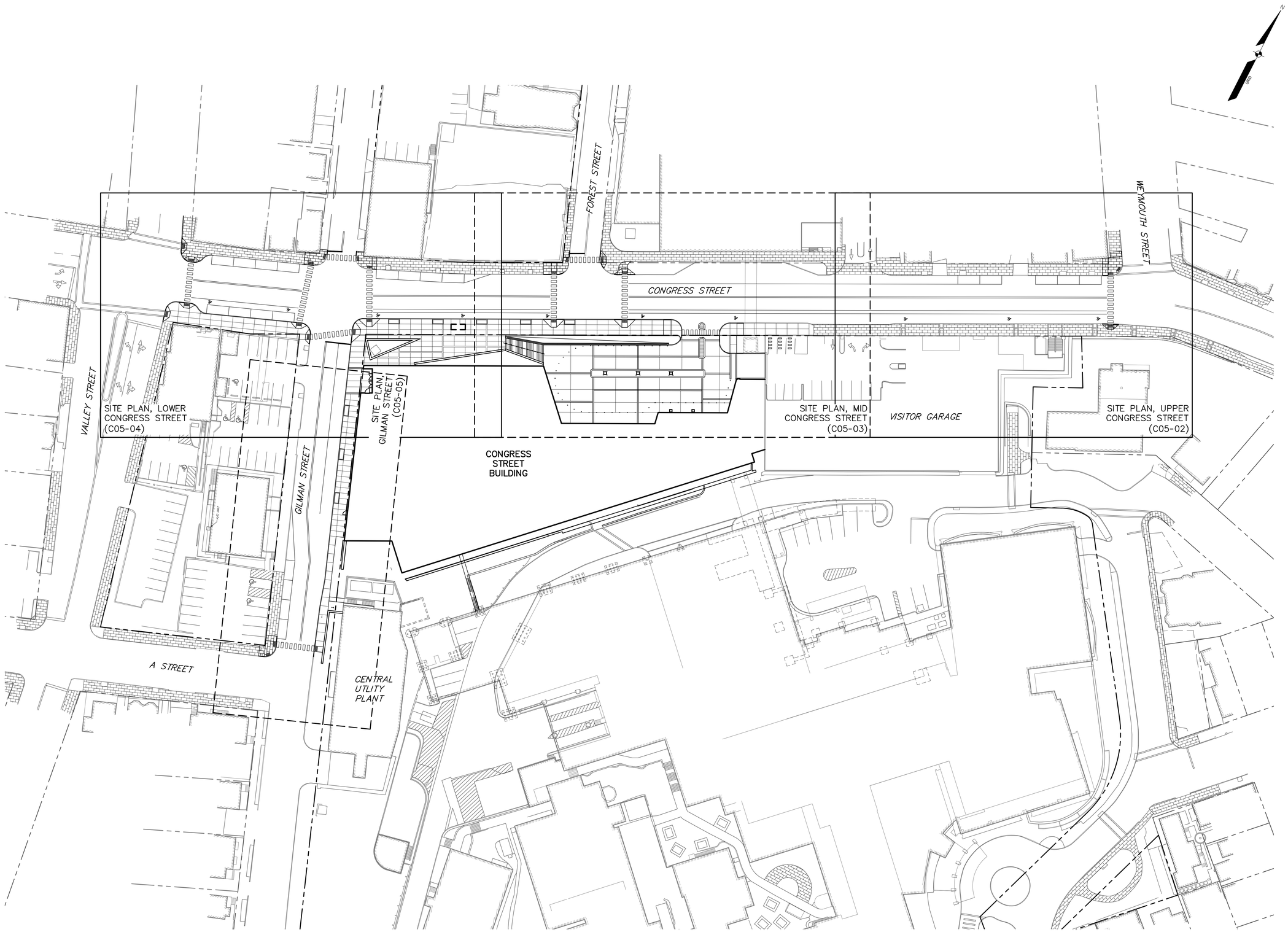
1546SD0401.dwg, FAB CONGRESS



GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 INCH = 30 FT.

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Portland, ME 04102

CONSULTANTS

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Sebago Technics Inc.
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MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

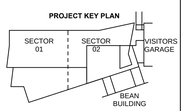
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
NO. 105
STATE OF MAINE
12-10-18

KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

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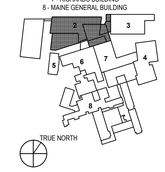
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



RESUBMIT TO CITY
DECEMBER 10, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	DLR

TITLE

OVERALL SITE PLAN, CONGRESS STREET EXPANSION

SHEET NUMBER

C05-01

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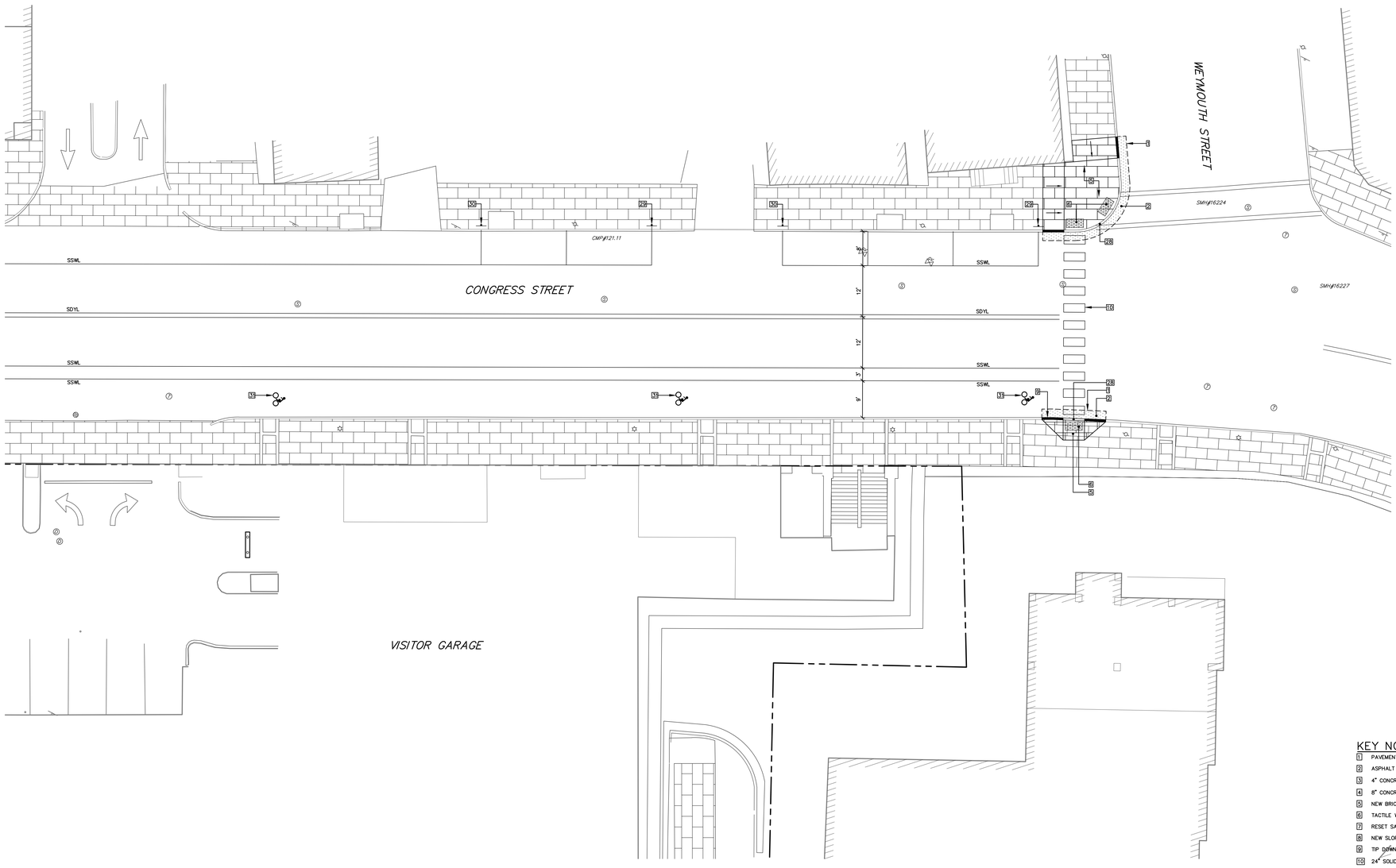
1546653.dwg, TAB: S



GRAPHIC SCALE

10 0 5 10 20

(IN FEET)
1 INCH = 10 FT.

KEY NOTES

1. PAVEMENT SAW CUT
2. ASPHALT STREET PAVING
3. 4" CONCRETE PAVING
4. 8" CONCRETE PAVING
5. NEW BRICK PAVING
6. TACTILE WARNING PLATES 2 FT. X 4 FT.
7. RESET SALVAGED GRANITE CURB
8. NEW SLOPED GRANITE CURB
9. TIP DOWN GRANITE CURB
10. 24" SOLID WHITE PAINT BARS, 5 FT. WIDE, SPACED 24" APART
11. (2) 4" SOLID YELLOW PAINT LINES
12. NEW STREET LIGHT - SEE SITE ELECTRICAL PLAN
13. 5 FT. X 10 FT. TREE WELL - GRANITE CURB SET 6" ABOVE SIDEWALK
14. METRO BUS STOP LOCATION
15. EXISTING TELEPHONE VAULT TO REMAIN
16. MMC DIRECTIONAL SIGN - SEE SIGNAGE PLAN
17. MMC PRIMARY SIGN ON BATTER WALL - SEE SIGNAGE PLAN
18. BATTER RETAINING WALL
19. 18" SEAT WALL
20. GRANITE STAIR - 5 RISERS PER FLIGHT
21. STAINLESS STEEL BOLLARD
22. STAINLESS STEEL HANDRAIL
23. NEW TYPE 1 GRANITE CURB SET 6" ABOVE PAVING
24. STOP SIGN
25. BUILDING CANOPY
26. EGRESS STAIR - SEE PERKINS + WILL PLANS
27. BRIDGE CONNECTOR - SEE PERKINS + WILL PLANS
28. RESET CURB FLUSH W/STREET
29. PARKING LEFT / NO PARKING RIGHT
30. PARKING RIGHT / NO PARKING LEFT
31. BIKE LANE SYMBOL - WHITE PAINT PER MUTCD STANDARDS
32. 2" X 12" GRANITE ACCENT BAND
33. 4" X 12" GRANITE ACCENT BAND
34. SAW CUT CONTROL JOINT
35. METRO BUS STOP SIGN
36. 12" WHITE PAINTED STOP BAR
37. CONCRETE BLOCK RETAINING WALL
38. UTILITY POLE TO REMAIN
39. POLE GUY TO REMAIN
40. CMP TO SET SIDEWALK GUY
41. BUILDING WALL EXTENSION - SEE ARCHITECTURAL PLANS

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MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

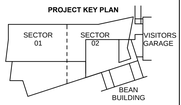
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
No. 245
STATE OF MAINE
12-10-18

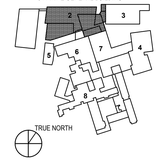
KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

1 - NOT USED
2 - CONGRESS STREET
3 - VISITOR GARAGE
4 - EAST TOWER
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



RESUBMIT TO CITY
DECEMBER 10, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	DLR

TITLE
SITE PLAN, UPPER CONGRESS, CONGRESS STREET EXPANSION

SHEET NUMBER
C05-02

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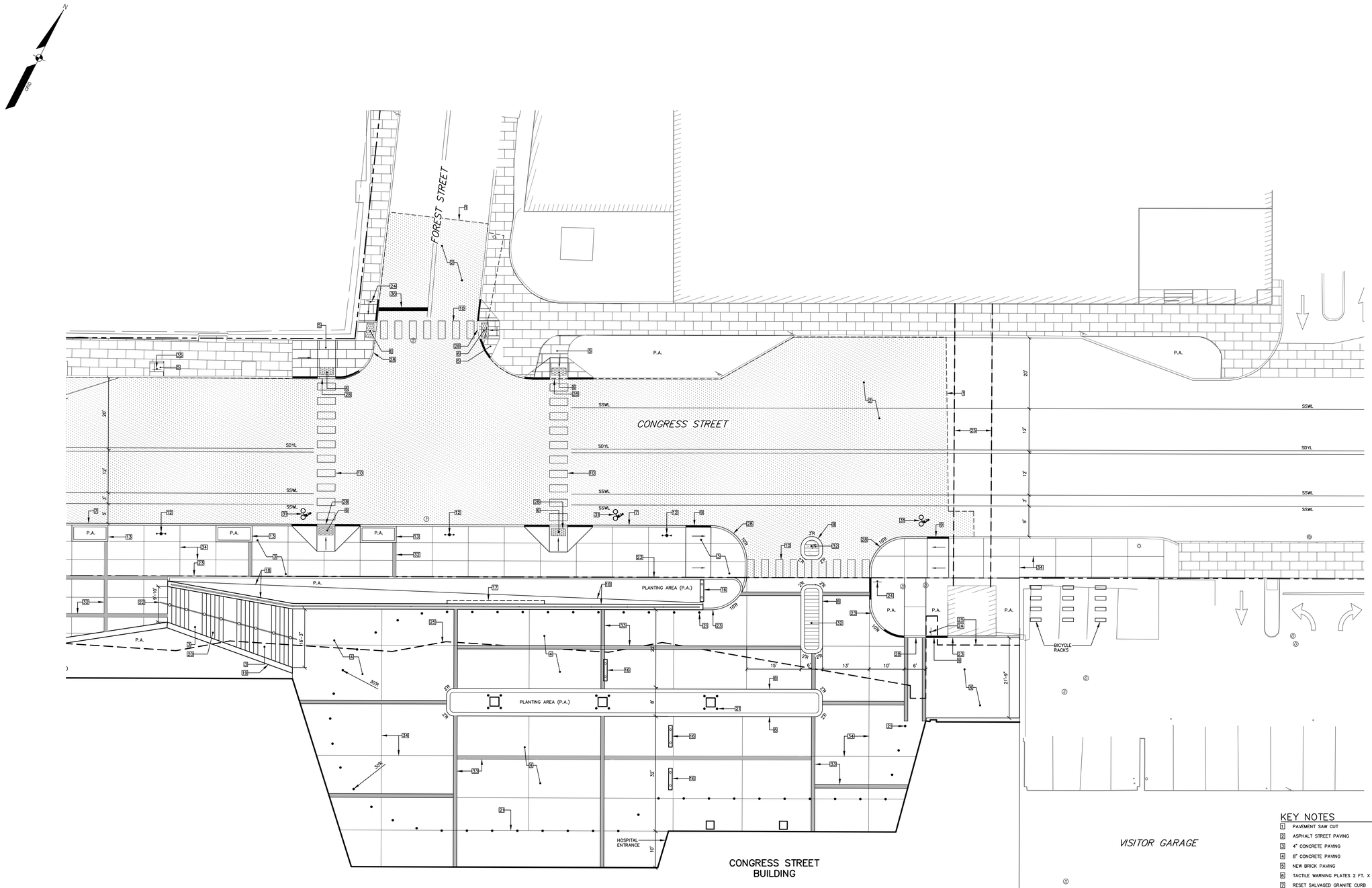
1545653-10 acad-dwg, TAB(1)



GRAPHIC SCALE

10 0 5 10 20

(IN FEET)
1 INCH = 10 FT.

KEY NOTES

1	PAVEMENT SAW CUT
2	ASPHALT STREET PAVING
3	4" CONCRETE PAVING
4	8" CONCRETE PAVING
5	NEW BRICK PAVING
6	TACTILE WARNING PLATES 2 FT. X 4 FT.
7	RESET SALVAGED GRANITE CURB
8	NEW SLOPED GRANITE CURB
9	TIP DOWN GRANITE CURB
10	24" SOLID WHITE PAINT BARS, 5 FT. WIDE, SPACED 24" APART
11	(2) 4" SOLID YELLOW PAINT LINES
12	NEW STREET LIGHT - SEE SITE ELECTRICAL PLAN
13	5 FT. X 10 FT. TREE WELL - GRANITE CURB SET 6" ABOVE SIDEWALK
14	METRO BUS STOP LOCATION
15	EXISTING TELEPHONE VAULT TO REMAIN
16	MMC DIRECTIONAL SIGN - SEE SIGNAGE PLAN
17	MMC PRIMARY SIGN ON BATTER WALL - SEE SIGNAGE PLAN
18	BATTER RETAINING WALL
19	18" SEAT WALL
20	GRANITE STAIR - 5 RISERS PER FLIGHT
21	STAINLESS STEEL BOLLARD
22	STAINLESS STEEL HANDRAIL
23	NEW TYPE 1 GRANITE CURB SET 6" ABOVE PAVING
24	STOP SIGN
25	BUILDING CANOPY
26	EGRESS STAIR - SEE PERKINS + WILL PLANS
27	BRIDGE CONNECTOR - SEE PERKINS + WILL PLANS
28	RESET CURB FLUSH W/STREET
29	PARKING LEFT / NO PARKING RIGHT
30	PARKING RIGHT / NO PARKING LEFT
31	BIKE LANE SYMBOL - WHITE PAINT PER MUTCD STANDARDS
32	2" X 12" GRANITE ACCENT BAND
33	4" X 12" GRANITE ACCENT BAND
34	SAW CUT CONTROL JOINT
35	METRO BUS STOP SIGN
36	12" WHITE PAINTED STOP BAR
37	CONCRETE BLOCK RETAINING WALL
38	UTILITY POLE TO REMAIN
39	POLE GUY TO REMAIN
40	CMP TO SET SIDEWALK GUY
41	BUILDING WALL EXTENSION - SEE ARCHITECTURAL PLANS

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D.G. Jones International
3 Baldwin Green Common,Suite 202, Woburn, MA 01801

MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

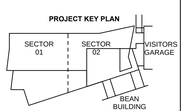
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
No. 1205
STATE OF MAINE
12-10-18

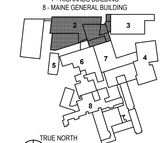
KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

1 - NOT USED
2 - CONGRESS STREET
3 - VISITOR GARAGE
4 - EAST TOWER
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



TRUE NORTH

RESUBMIT TO CITY
DECEMBER 10, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	DLR

TITLE

SITE PLAN, MID CONGRESS, CONGRESS STREET EXPANSION

SHEET NUMBER

C05-03

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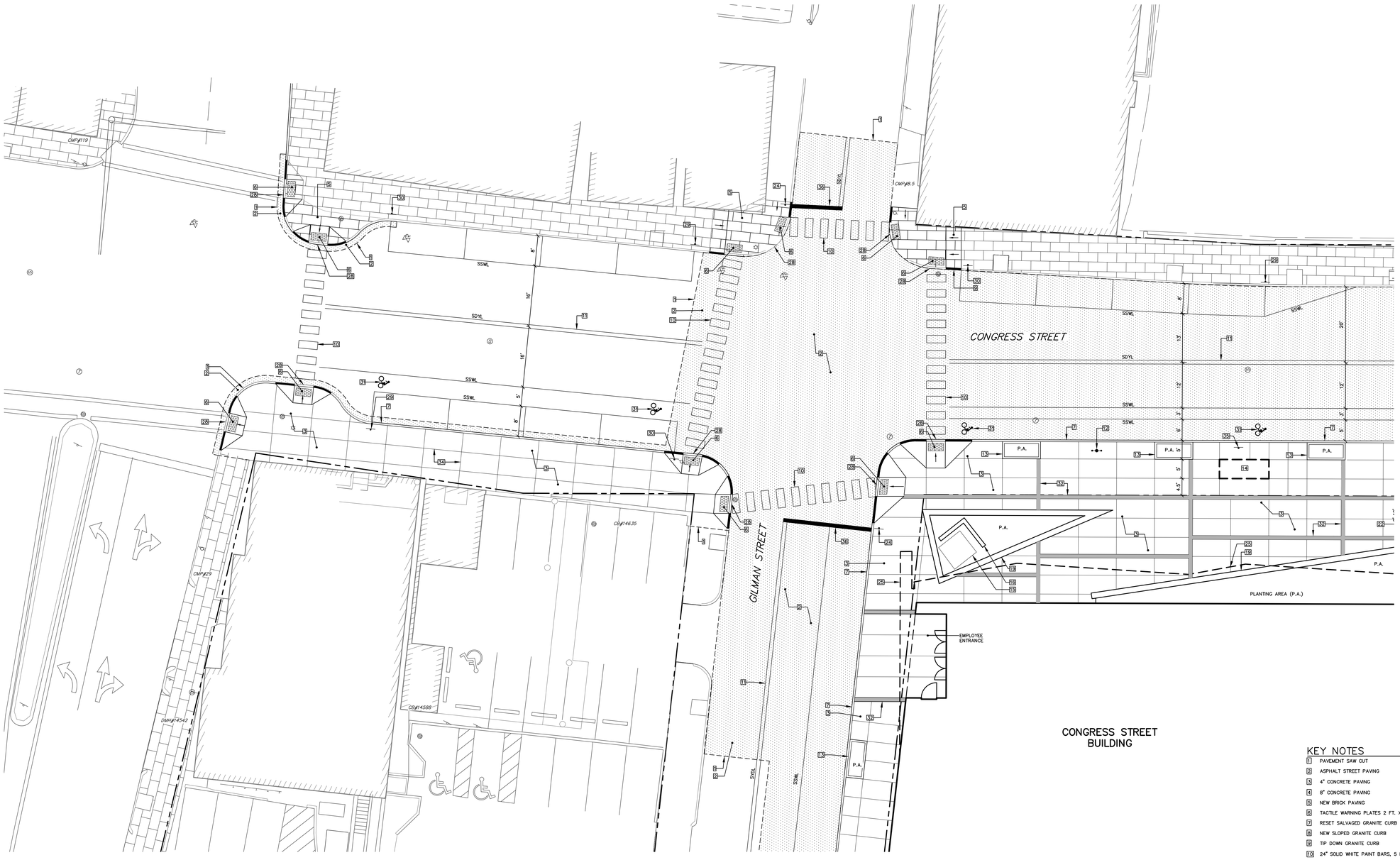
1546653-10 sht04.dwg, TAB (2)



CONGRESS STREET BUILDING

GRAPHIC SCALE
10 0 5 10 20
(IN FEET)
1 INCH = 10 FT.

KEY NOTES

1. PAVEMENT SAW CUT
2. ASPHALT STREET PAVING
3. 4" CONCRETE PAVING
4. 8" CONCRETE PAVING
5. NEW BRICK PAVING
6. TACTILE WARNING PLATES 2 FT. X 4 FT.
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12. NEW STREET LIGHT - SEE SITE ELECTRICAL PLAN
13. 5 FT. X 10 FT, TREE WELL - GRANITE CURB SET 6" ABOVE SIDEWALK
14. METRO BUS STOP LOCATION
15. EXISTING TELEPHONE VAULT TO REMAIN
16. MMC DIRECTIONAL SIGN - SEE SIGNAGE PLAN
17. MMC PRIMARY SIGN ON BATTER WALL - SEE SIGNAGE PLAN
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19. 18" SEAT WALL
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21. STAINLESS STEEL BOLLARD
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23. NEW TYPE 1 GRANITE CURB SET 6" ABOVE PAVING
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25. BUILDING CANOPY
26. EGRESS STAIR - SEE PERKINS + WILL PLANS
27. BRIDGE CONNECTOR - SEE PERKINS + WILL PLANS
28. RESET CURB FLUSH W/STREET
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3 Baldwin Green Common,Suite 202, Woburn, MA 01801

MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

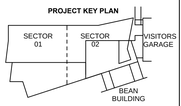
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
No. 245
STATE OF MAINE
12-10-18

KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

1 - NOT USED
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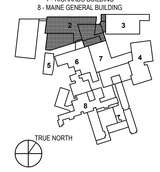

RESUBMIT TO CITY
DECEMBER 10, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	DLR

TITLE
SITE PLAN, LOWER CONGRESS, CONGRESS STREET EXPANSION

SHEET NUMBER
C05-04

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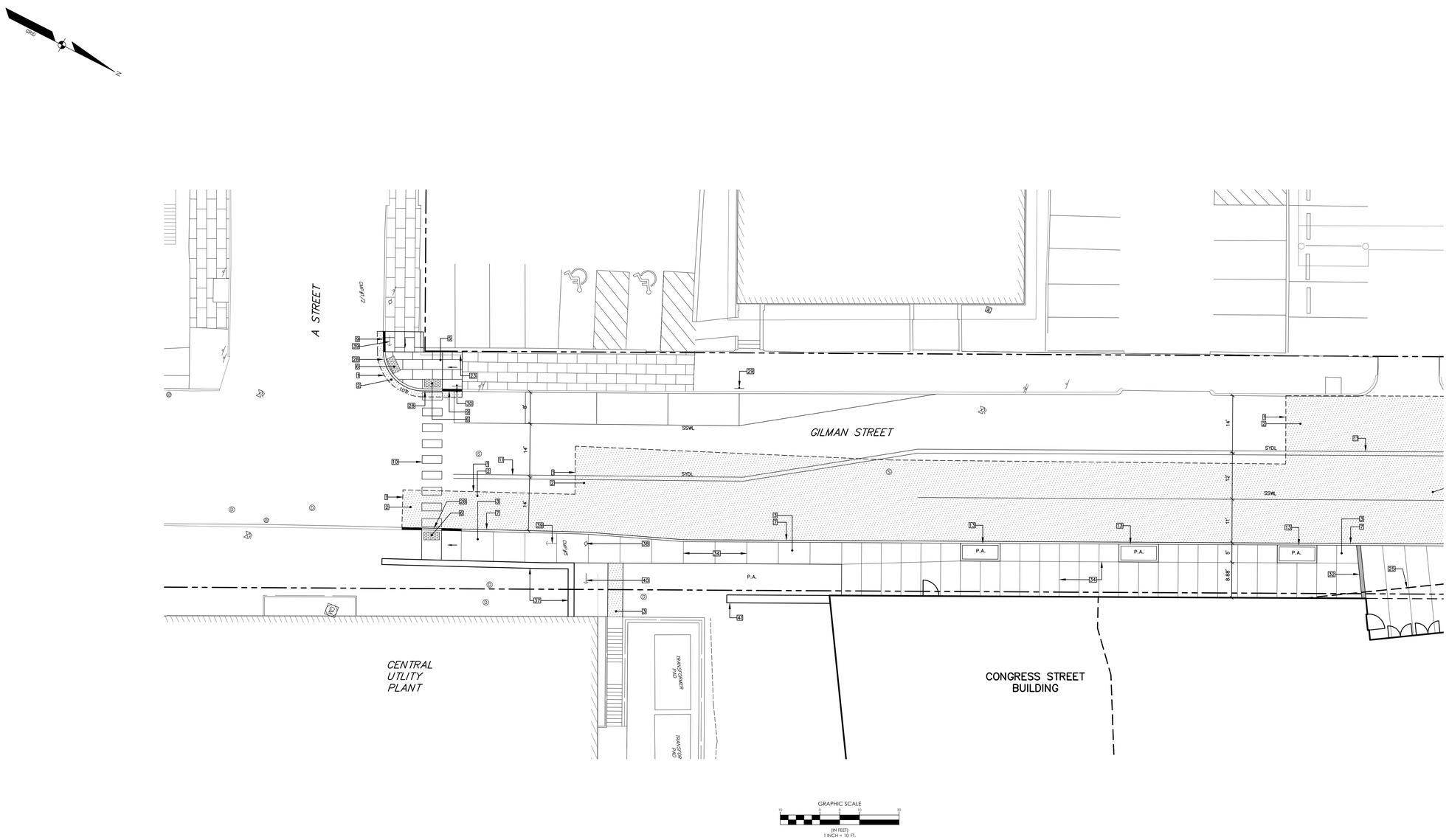

KEY NOTES

1. PAVEMENT SAW CUT
2. ASPHALT STREET PAVING
3. 4" CONCRETE PAVING
4. 8" CONCRETE PAVING
5. NEW BRICK PAVING
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15. EXISTING TELEPHONE VAULT TO REMAIN
16. MMC DIRECTIONAL SIGN - SEE SIGNAGE PLAN
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22. STAINLESS STEEL HANDRAIL
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24. STOP SIGN
25. BUILDING CANOPY
26. EGRESS STAIR - SEE PERKINS + WILL PLANS
27. BRIDGE CONNECTOR - SEE PERKINS + WILL PLANS
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41. BUILDING WALL EXTENSION - SEE ARCHITECTURAL PLANS

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Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

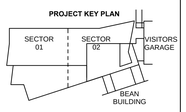
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102



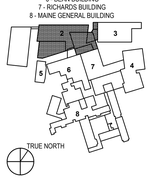
KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

1 - NOT USED
2 - CONGRESS STREET
3 - VISITOR GARAGE
4 - EAST TOWER
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



RESUBMIT TO CITY
DECEMBER 10, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	DLR

TITLE

SITE PLAN, GILMAN STREET, CONGRESS STREET EXPANSION

SHEET NUMBER

C05-05

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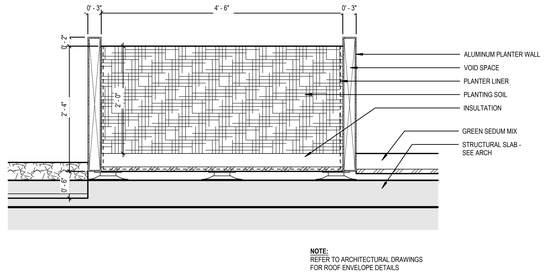
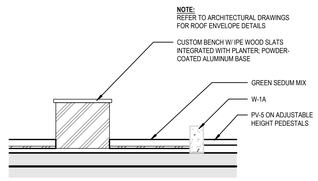
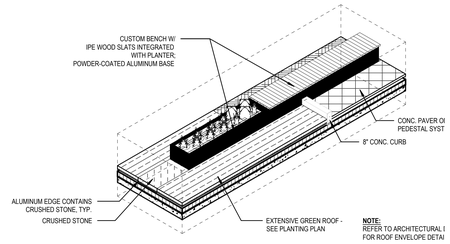
1546653-10 scale.dwg, TAB:(4)



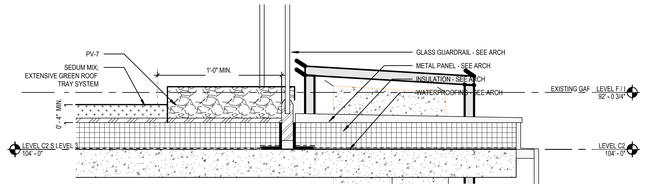
7 GREEN ROOF C2 PLANTER
1" = 1'-0"



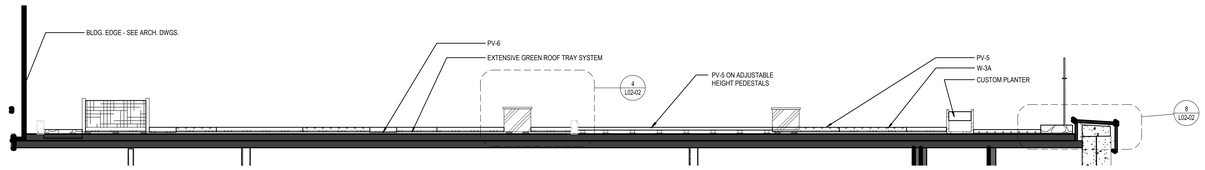
4 GREEN ROOF @ BENCH PLANTER, TYP.
1/2" = 1'-0"



6 GREEN ROOF AXON DETAIL



8 GUARDRAIL DETAIL @ ROOF C2
1" = 1'-0"



2 GREEN ROOF C2 N/S SECTION
1/4" = 1'-0"

PLANTING KEY (ROOFS)

GROUNDCOVER

DE FL	Deschamphia flexuousa	Wavy Hairgrass
LI SP	Liatris spicata	Blazing Star
PA VI	Panicum virgatum 'Northwind'	Northwind Switch grass
RU FU	Rudbeckia fulgida 'Goldstrum'	Black eyed Susan
VA AN	Vaccinium angustifolium	Lowbush Blueberry

GREEN SEDUM MIX	Sedum acre 'Golden Carpet' Sedum album 'France' Sedum floriferum 'Weihenstephaner's Gold' Sedum kamtschaticum Sedum sexangulare Sedum spurium 'Summer Glory' Sedum spurium 'John Creech' Sedum takesimensis
RED SEDUM MIX	Sedum acre 'Octoberfest' Sedum album 'Coral Carpet' Sedum floriferum 'Weihenstephaner's Gold' Sedum spurium 'Dragon's Blood' Sedum spurium 'Fuldaglut' Sedum spurium 'Voodoo'

PAVING TYPES

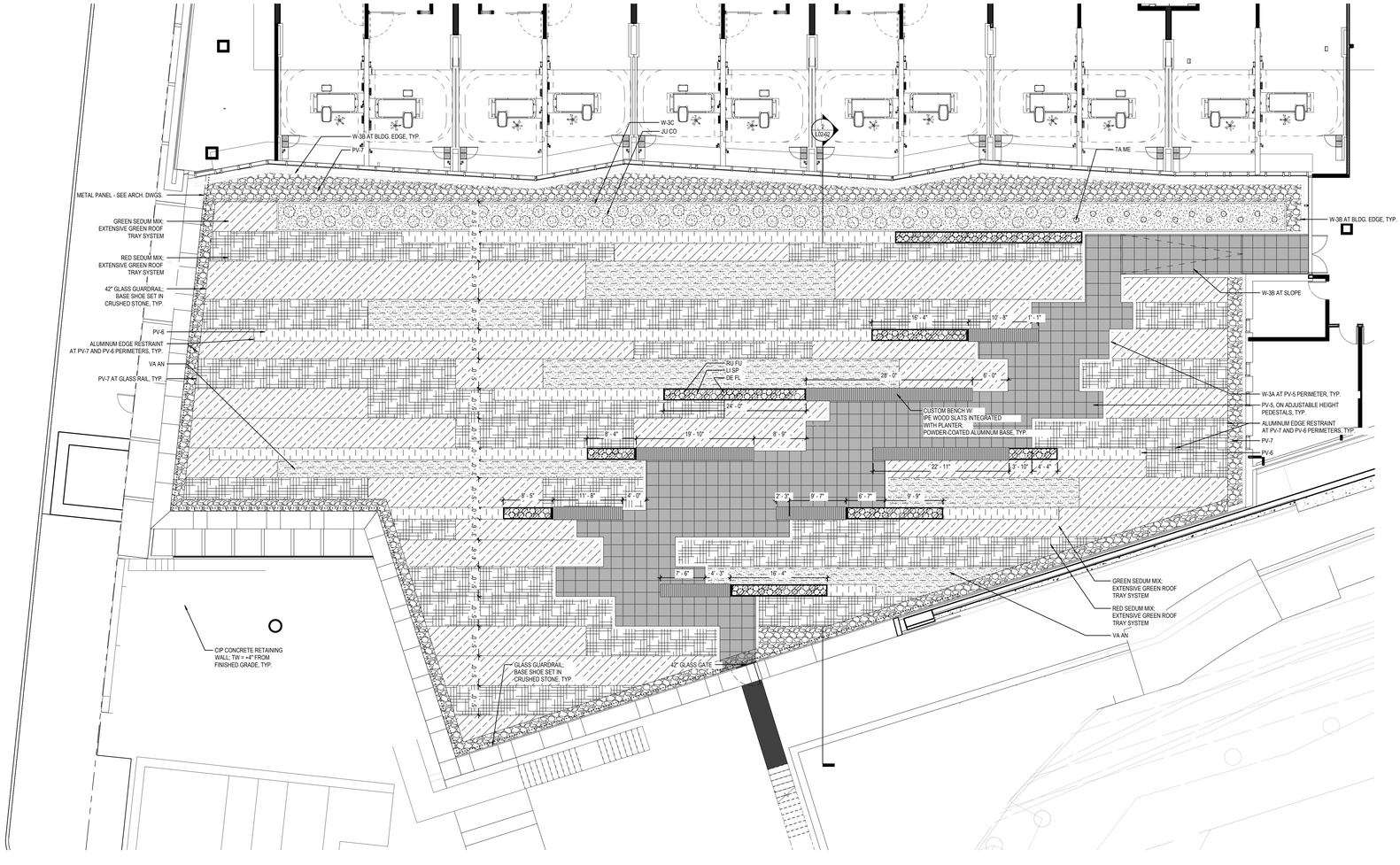
PV-1A	CONCRETE PAVEMENT - PED
PV-1B	CONCRETE PAVEMENT - VEH
PV-2	CONCRETE PAVEMENT BANDING
PV-3A	VEH STONE PAVER TYPE 1
PV-3B	VEH STONE PAVER TYPE 2
PV-4A	PED STONE PAVER TYPE 1
PV-4B	PED STONE PAVER TYPE 2
PV-5	ROOF PAVER ASSEMBLY
PV-6	CRUSHED STONE - MINI SLATE
PV-7	CRUSHED STONE - PEA STONE
PV-8	CRUSHED STONE - JUMBO SLATE

WALL TYPES

W-1	6" WIDTH GRANITE CURB
W-1R	6" WIDTH RADIAL GRANITE CURB
W-2	STONE VENEER RETAINING WALL
W-3A	PRECAST CONCRETE CURB TYPE A
W-3B	PRECAST CONCRETE CURB TYPE B
W-3C	PRECAST CONCRETE CURB TYPE C
W-4	CONCRETE EDGE RESTRAINT

*SEE GENERAL SHEET FOR MATERIAL DESCRIPTION

* MATERIAL PATTERNS IN THE DRAWINGS DO NOT REFLECT ACTUAL PAVEMENT PATTERNS.



1 ENLARGED PLAN - C2 GREEN ROOF
1/8" = 1'-0"

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CONSULTANTS

CIVIL/ LANDSCAPE ARCHITECT
Sebago Technics
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South Portland, ME 04106

STRUCTURAL ENGI/ BUILDING ENVELOPE CONSULTANT
Simpson Gumpertz & Heger Inc.
41 Seyon Street, Building 1, Suite 500,
Waltham, MA 02453

MEPFP ENGINEER/CODE/LOW VOLTAGE
AKF Group LLC
99 Bedford Street, 2nd Floor, Boston, MA 02111

CONSTRUCTION MANAGER
TURNER CONSTRUCTION
2 Seaport Lane, Suite 200, Boston, MA 02210

ELEVATOR CONSULTANT
VDA (Van Deusen & Associates)
101 Summer Street, 4th Floor, Boston, MA 02110

COST ESTIMATOR
D.G. Jones International
3 Baldwin Green Common,Suite 202, Woburn, MA 01801

MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

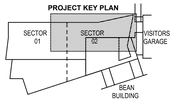
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONNAUGHTON
LA 1208
STATE OF MAINE
9/25/18

KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

1 - NOT USED
2 - CONGRESS STREET
3 - VISITOR GARAGE
4 - EAST TOWER
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



CITY SUBMISSION
SEPTEMBER 25, 2018

NO	ISSUE	DATE
1	CITY SUBMISSION	9/25/2018

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	WTC

TITLE
SITE PLAN
GREEN ROOF
CONGRESS STREET EXPANSION

SHEET NUMBER

C05-02

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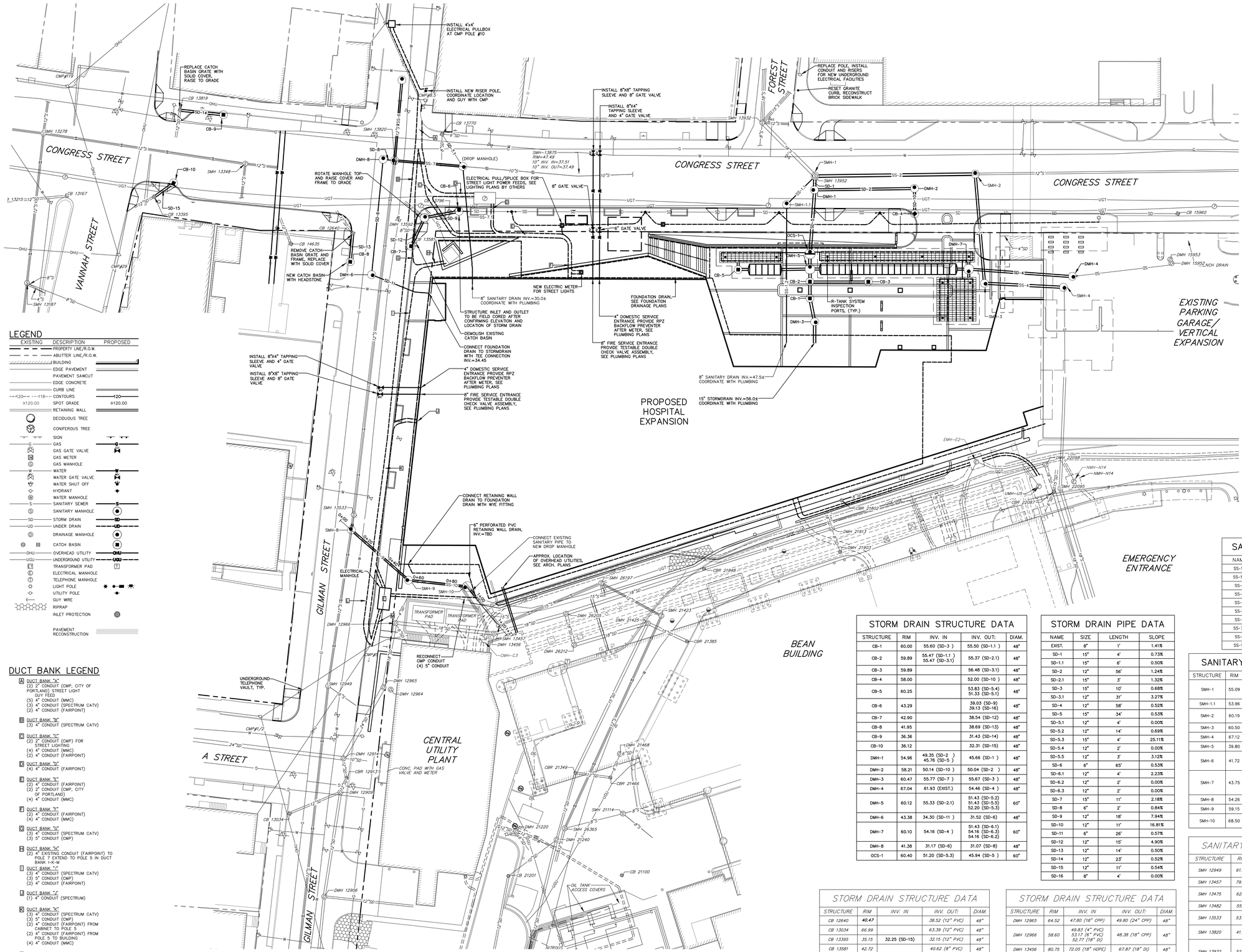
CONGRESS STREET
VANNAH STREET
GILMAN STREET
A STREET
FOREST STREET
EXISTING PARKING GARAGE/ VERTICAL EXPANSION
PROPOSED HOSPITAL EXPANSION
EMERGENCY ENTRANCE
BEAN BUILDING
CENTRAL UTILITY PLANT
INSTALL 4"x4" ELECTRICAL PULLBOX AT CMP POLE #10
REPLACE CATCH BASIN GRATE WITH SOLID COVER, RAISE TO GRADE
INSTALL NEW RISER POLE, COORDINATE LOCATION AND GUY WITH CMP
INSTALL 8"X8" TAPPING SLEEVE AND 8" GATE VALVE
INSTALL 8"X4" TAPPING SLEEVE AND 4" GATE VALVE
REPLACE POLE, INSTALL CONDUIT AND RISERS FOR NEW UNDERGROUND ELECTRICAL FACILITIES
RESET GRANITE CURB, RECONSTRUCT BRICK SIDEWALK
ROTATE MANHOLE TOP AND RAISE COVER AND FRAME TO GRADE
ELECTRICAL PULL/SPLICE BOX FOR STREET LIGHT POWER FEEDS, SEE LIGHTING PLANS BY OTHERS
8" GATE VALVE
6" GATE VALVE
REMOVE CATCH BASIN GRATE AND FRAME, REPLACE WITH SOLID COVER
NEW CATCH BASIN WITH HEADSTONE
NEW ELECTRIC METER FOR STREET LIGHTS
8" SANITARY DRAIN INV.=30.0± COORDINATE WITH PLUMBING
STRUCTURE INLET AND OUTLET TO BE FIELD CORED AFTER CONFIRMING ELEVATION AND LOCATION OF STORM DRAIN
DEMOLISH EXISTING CATCH BASIN
CONNECT FOUNDATION DRAIN TO STORMDRAIN WITH TEE CONNECTION INV.=34.45
4" DOMESTIC SERVICE ENTRANCE PROVIDE RPZ BACKFLOW PREVENTER AFTER METER, SEE PLUMBING PLANS
8" FIRE SERVICE ENTRANCE PROVIDE TESTABLE DOUBLE CHECK VALVE ASSEMBLY, SEE PLUMBING PLANS
FOUNDATION DRAIN, SEE FOUNDATION DRAINAGE PLANS
R-TANK SYSTEM INSPECTION PORTS, (TYP.)
8" SANITARY DRAIN INV.=47.5± COORDINATE WITH PLUMBING
15" STORMDRAIN INV.=56.0± COORDINATE WITH PLUMBING
INSTALL 8"X4" TAPPING SLEEVE AND 4" GATE VALVE
INSTALL 8"X8" TAPPING SLEEVE AND 8" GATE VALVE
CONNECT RETAINING WALL DRAIN TO FOUNDATION DRAIN WITH WYE FITTING
6" PERFORATED PVC RETAINING WALL DRAIN, INV.=TBD
CONNECT EXISTING SANITARY PIPE TO NEW DROP MANHOLE
APPROX. LOCATION OF OVERHEAD UTILITIES, SEE ARCH. PLANS
ELECTRICAL MANHOLE
TRANSFORMER PAD
RECONNECT CMP CONDUIT (4) 5" CONDUIT
UNDERGROUND TELEPHONE VAULT, TYP.
CONC. PAD WITH GAS VALVE AND METER
OIL TANK ACCESS COVERS
(DROP MANHOLE)
SMH-1.5875 Rim=47.49 10" INV. IN=37.51 10" INV. OUT=37.49
SMH 13278
SMH 13819
SMH 13920
SMH 13932
SMH 13348
SMH 13187
SMH 13533
SMH 12949
SMH 12906
SMH 26197
SMH 21423
SMH 22095
SMH 13457
SMH 13456
SMH 21114
SMH 26365
SMH 21240
SMH 21220
SMH 21201
SMH 21100
SMH 21468
SMH 21349
SMH 21385
SMH 21846
SMH 21802
SMH 21385
SMH 21913
SMH 21903
SMH 21425
SMH 26205
SMH 26212
SMH 12965
SMH 12964
SMH 12914
SMH 12909
SMH 12966
SMH 13952
SMH 15952
SMH 15953
SMH 15952_NCH DRAIN
SMH 13796
SMH 13592
SMH 13581
SMH 13770
SMH 13596
SMH 13596
CB 13819
CB 13770
CB 13167
CB 13395
CB 12640
CB 14635
CB 13034
CB 12966
CB 12913
CB 21201
CB 21100
CB 21385
CB 21468
CB 21466
CB 21349
CB 21802
CB 21846
CB 22087
CB 25588
CB 15960
CB 22095
DMH 12966
DMH 12965
DMH 12964
DMH 12914
DMH 12909
DMH 12906
DMH 26205
DMH 26212
DMH 21425
DMH 21913
DMH 21903
DMH 21468
DMH 21349
DMH 15953
DMH 15952
DMH 22095
UMH-U5
UMH-N14
NMH-N14
EMH-E2
OCS-1
CB-1
CB-2
CB-3
CB-4
CB-5
CB-6
CB-7
CB-8
DMH-1
DMH-2
DMH-3
DMH-4
DMH-5
DMH-6
DMH-7
DMH-8
SD-1
SD-2
SD-4
SD-7
SD-8
SD-9
SD-11
SD-12
SD-13
SD-14
SD-15
SS-1
SS-2
SS-4
SS-7
SS-7.1
SS-9
SS-10
SMH-1
SMH-1.1
SMH-2
SMH-3
SMH-4
SMH-5
SMH-8
SMH-9
SMH-10
SMH-C3
CMP#19
CMP#29
CMP#1/2
CMP#3
CMP#5
CMP#6
CMP#7
CMP#8
CMP#9
CMP#10
OHU
UGT
SD
SS
W
G
GAS
N
0+60
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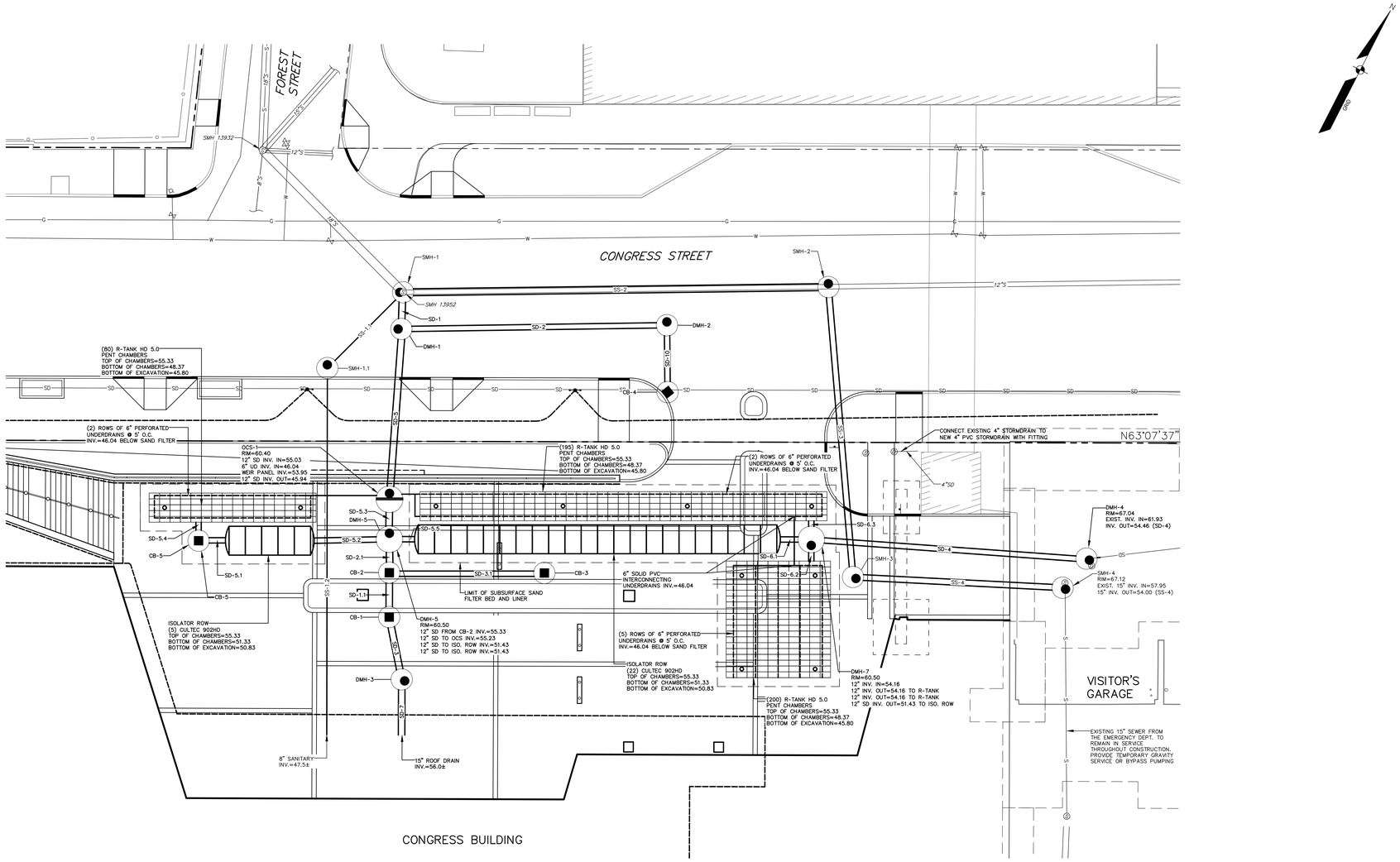
7+00
7+20
7+40
7+60
7+80
8+00
8+20
8+40

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	BUILDING	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	CURB LINE	
--420-- --118--	CONTOURS	120
×120.00	SPOT GRADE	+120.00
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	SIGN	
G	GAS	G
	GAS GATE VALVE	
GM	GAS METER	
G	GAS MANHOLE	
W	WATER	W
	WATER GATE VALVE	
	WATER SHUT OFF	
	HYDRANT	
W	WATER MANHOLE	
S	SANITARY SEWER	S
S	SANITARY MANHOLE	
SD	STORM DRAIN	SD
UD	UNDER DRAIN	UD
D	DRAINAGE MANHOLE	
	CATCH BASIN	
OHU	OVERHEAD UTILITY	OHU
UGU	UNDERGROUND UTILITY	UGU
T	TRANSFORMER PAD	T
E	ELECTRICAL MANHOLE	
T	TELEPHONE MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	
	RIPRAP	
	INLET PROTECTION	



GRAPHIC SCALE
10 0 5 10 20
(IN FEET)
1 INCH = 10 FT.

SANITARY SEWER STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
SMH 13932	52.64	43.42 (15" RCP) 44.44 (12" PVC) 41.64 (18" RCP) 44.64 (8" PVC)	40.64 (18" RCP)	48"
SMH 13952	55.09	45.89 (12" PVC)	44.61 (18" RCP)	48"

SANITARY SEWER STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
SMH-1	55.09	44.71 (SS-2) 46.87 (SS-1.1) 45.63 (SD-1)		48"
SMH-1.1	53.96	47.09 (SS-1.2)	46.99 (SS-1.1)	48"
SMH-2	60.19	51.21 (SS-3) 51.41 (SS-16008)	50.77 (SS-2)	48"
SMH-3	60.50	52.24 (SS-4)	52.14 (SS-3)	48"
SMH-4	67.12	57.95 (SS-11065)	54.00 (SS-4)	48"

SANITARY SEWER PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SS-1.1	8"	20'	0.60%
SS-1.2	8"	81'	0.51%
SS-2	18"	92'	6.60%
SS-3	15"	62'	1.51%
SS-4	15"	43'	4.07%

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	60.00	55.60 (SD-3)	55.50 (SD-1.1)	48"
CB-2	59.89	55.47 (SD-1.1) 55.47 (SD-3.1)	55.37 (SD-2.1)	48"
CB-3	59.89		56.48 (SD-3.1)	48"
CB-4	58.00		52.00 (SD-10)	48"
CB-5	60.25		53.83 (SD-5.4) 51.33 (SD-5.1)	48"
DMH-1	54.96	49.35 (SD-2) 45.76 (SD-5)	45.66 (SD-1)	48"
DMH-2	58.21	50.14 (SD-10)	50.04 (SD-2)	48"
DMH-3	60.47	55.77 (SD-7)	55.67 (SD-3)	48"
DMH-4	67.04	61.93 (EXIST.)	54.46 (SD-4)	48"
DMH-5	60.12	55.33 (SD-2.1)	51.43 (SD-5.2) 51.43 (SD-5.5) 52.20 (SD-5.3)	60"
DMH-7	60.10	54.16 (SD-4)	51.43 (SD-6.1) 54.16 (SD-6.3) 54.16 (SD-6.2)	60"

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
EXIST.	8"	1'	1.41%
SD-1	15"	4'	0.73%
SD-1.1	15"	6'	0.50%
SD-2	12"	56'	1.24%
SD-2.1	15"	3'	1.32%
SD-3	15"	10'	0.68%
SD-3.1	12"	31'	3.27%
SD-4	12"	58'	0.52%
SD-5	15"	34'	0.53%
SD-5.1	12"	4'	0.00%
SD-5.2	12"	14'	0.69%
SD-5.3	15"	4'	25.11%
SD-5.4	12"	2'	0.00%
SD-5.5	12"	3'	3.12%
SD-6	6"	65'	0.53%
SD-6.1	12"	4'	2.23%
SD-6.2	12"	2'	0.00%
SD-6.3	12"	2'	0.00%
SD-7	15"	11'	2.18%
SD-8	6"	2'	0.84%
SD-9	12"	18'	7.94%
SD-10	12"	11'	16.81%

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COST ESTIMATOR
D.G. Jones International
3 Baldwin Green Common,Suite 202, Woburn, MA 01801

MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

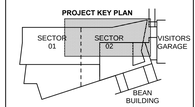
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

STATE OF MAINE
DANIEL L. RILEY
No. 10111
REGISTERED PROFESSIONAL ENGINEER
12-10-18

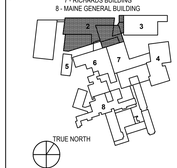
KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

1 - NOT USED
2 - CONGRESS STREET
3 - VISITOR GARAGE
4 - EAST TOWER
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



RESUBMIT TO CITY
DECEMBER 10, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL/MAM
Checked	DLR
Approved	DLR

TITLE
UTILITY PLAN, MAIN ENTRANCE, CONGRESS STREET EXPANSION

SHEET NUMBER
C30-01

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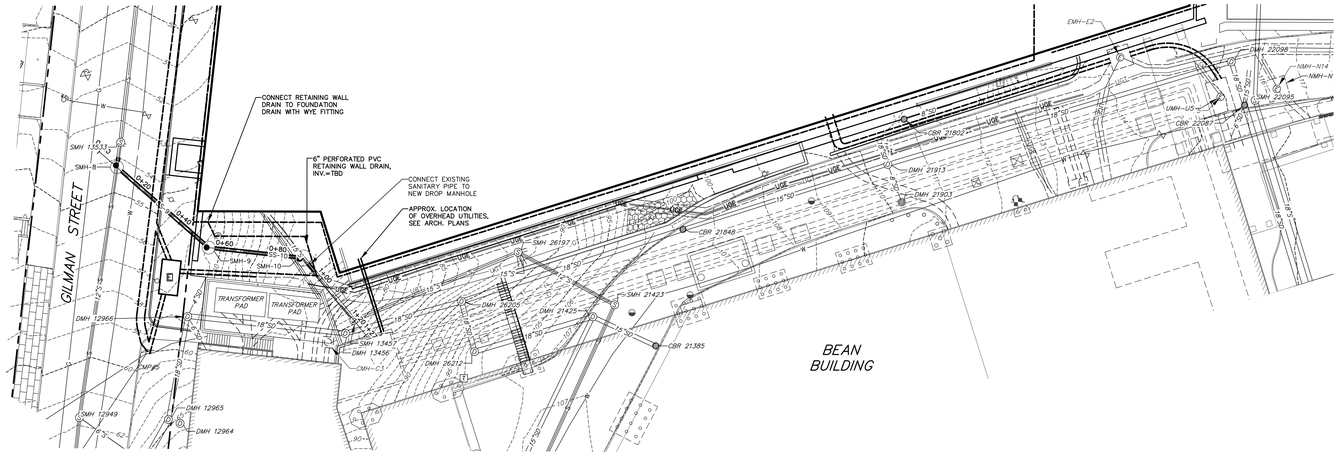
154603.04rp_TAB:U-CONGRESS-10

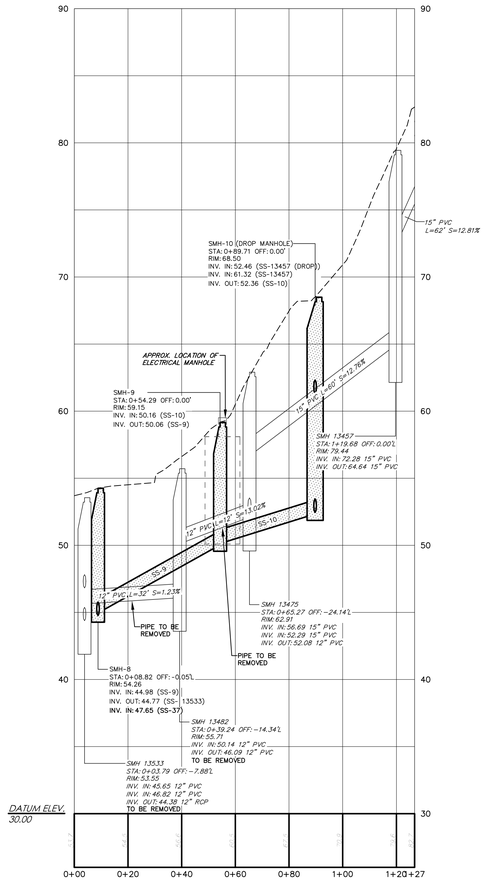




PLAN: UTILITY CORRIDOR
STA. 0+00 TO STA. 2+68
SCALE: 1"=20'

SANITARY SEWER PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SS-9	12"	41'	12.25%
SS-10	12"	31'	7.12%



PROFILE: UTILITY CORRIDOR
STA. 0+00 TO STA. 2+68
SCALE: 1"=20' HORIZ.
1"=4' VERT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	BUILDING	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	CURB LINE	
120 118	CONTOURS	120
×120.00	SPOT GRADE	+120.00
	RETAINING WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	SIGN	
G	GAS	G
	GAS GATE VALVE	
	GAS METER	
G	GAS MANHOLE	
W	WATER	W
	WATER GATE VALVE	
	WATER SHUT OFF	
	HYDRANT	
W	WATER MANHOLE	
S	SANITARY SEWER	S
S	SANITARY MANHOLE	
SD	STORM DRAIN	SD
UD	UNDER DRAIN	UD
D	DRAINAGE MANHOLE	
	CATCH BASIN	
OHU	OVERHEAD UTILITY	OHU
UGU	UNDERGROUND UTILITY	UGU
T	TRANSFORMER PAD	T
E	ELECTRICAL MANHOLE	
T	TELEPHONE MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	
	RIPRAP	
	INLET PROTECTION	
	PAVEMENT RECONSTRUCTION	

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22 Bramhall Street
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CONSULTANTS

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South Portland, ME 04106

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41 Seyon Street, Building 1, Suite 500,
Waltham, MA 02453

MEPP ENGINEER/CODE/LOW VOLTAGE
AKF Group LLC
99 Bedford Street, 2nd Floor, Boston, MA 02111

CONSTRUCTION MANAGER
TURNER CONSTRUCTION
2 Seaport Lane, Suite 200, Boston, MA 02210

ELEVATOR CONSULTANT
VDA (Van Deusen & Associates)
101 Summer Street, 4th Floor, Boston, MA 02110

COST ESTIMATOR
D.G. Jones International
3 Baldwin Green Common,Suite 202, Woburn, MA 01801

MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

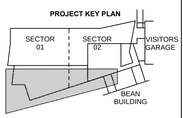
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

STATE OF MAINE — DANIEL L RILEY No. 10107 — REGISTERED PROFESSIONAL ENGINEER — 11-27-18

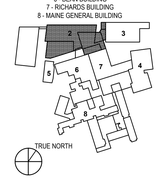
KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

1 - NOT USED
2 - CONGRESS STREET
3 - VISITOR GARAGE
4 - EAST TOWER
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



RESUBMIT TO CITY
NOVEMBER 27, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL/MAM
Checked	DLR
Approved	DLR

TITLE

PLAN & PROFILE - UTILITY CORRIDOR CONGRESS STREET EXPANSION

SHEET NUMBER

C30-02

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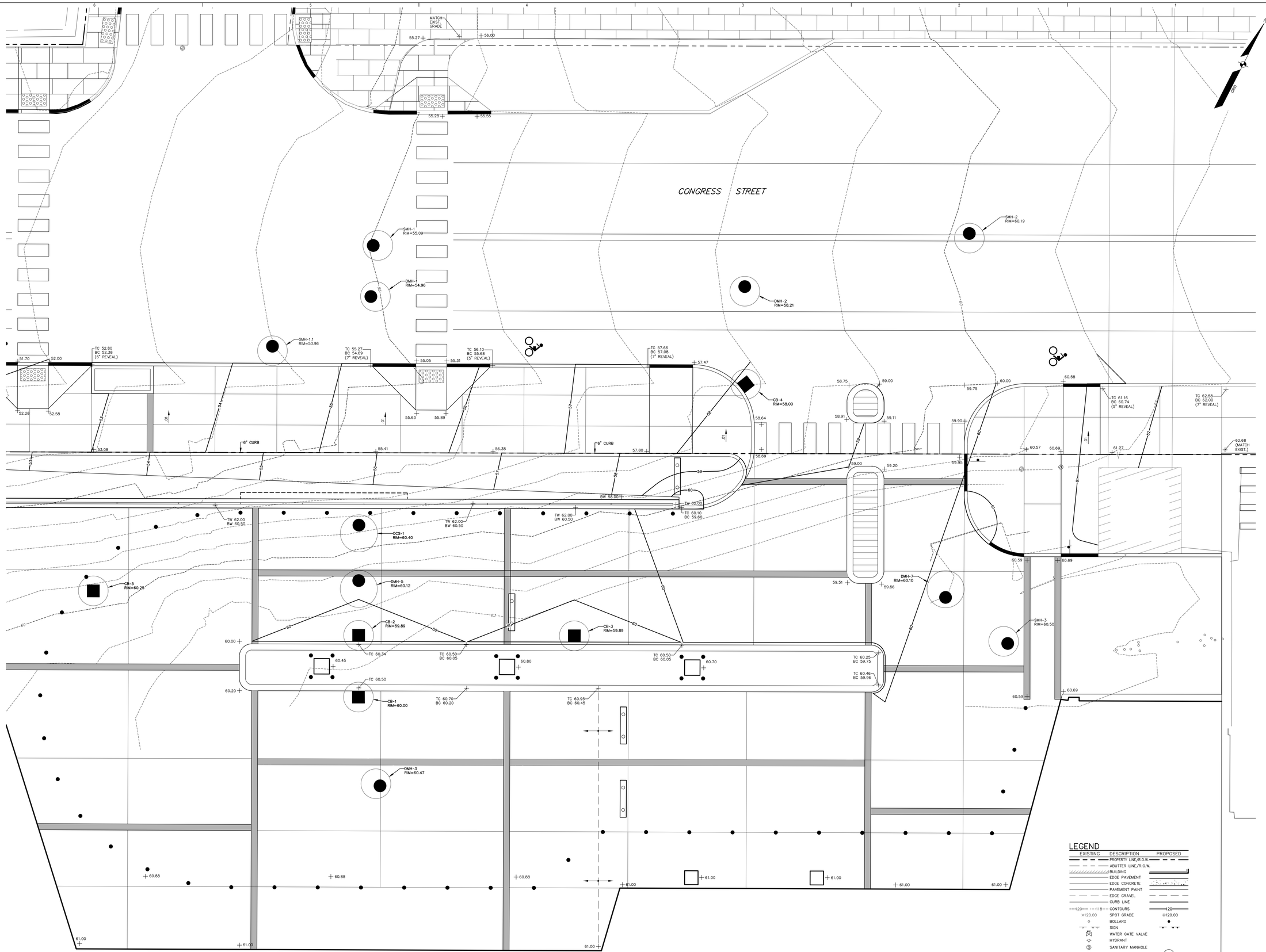
152189.0 #wp_ TAB: P- CONGRESS



LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	BUILDING	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
-120- -118-	CONTOURS	-120-
×120.00	SPOT GRADE	+120.00
	BOLLARD	
	SIGN	
	WATER GATE VALVE	
	HYDRANT	
S	SANITARY MANHOLE	
D	DRAINAGE MANHOLE	
	CATCH BASIN	
T	TRANSFORMER PAD	
E	ELECTRICAL MANHOLE	
EM	ELECTRIC METER	
H	HVAC UNIT	
T	TELEPHONE MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

GRAPHIC SCALE
(IN FEET)
1 INCH = 5 FT.

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COST ESTIMATOR
D.G. Jones International
3 Baldwin Green Common,Suite 202, Woburn, MA 01801

MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

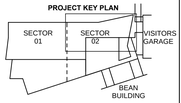
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

STATE OF MAINE
DANIEL L RILEY No. 10111
REGISTERED PROFESSIONAL ENGINEER
12-10-18

KEY PLANS

PROJECT KEY PLAN



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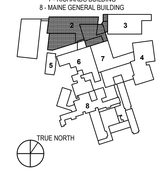

RESUBMIT TO CITY
DECEMBER 10, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	DLR

TITLE
GRADING PLAN UPPER CONGRESS CONGRESS STREET EXPANSION

SHEET NUMBER
C40-01

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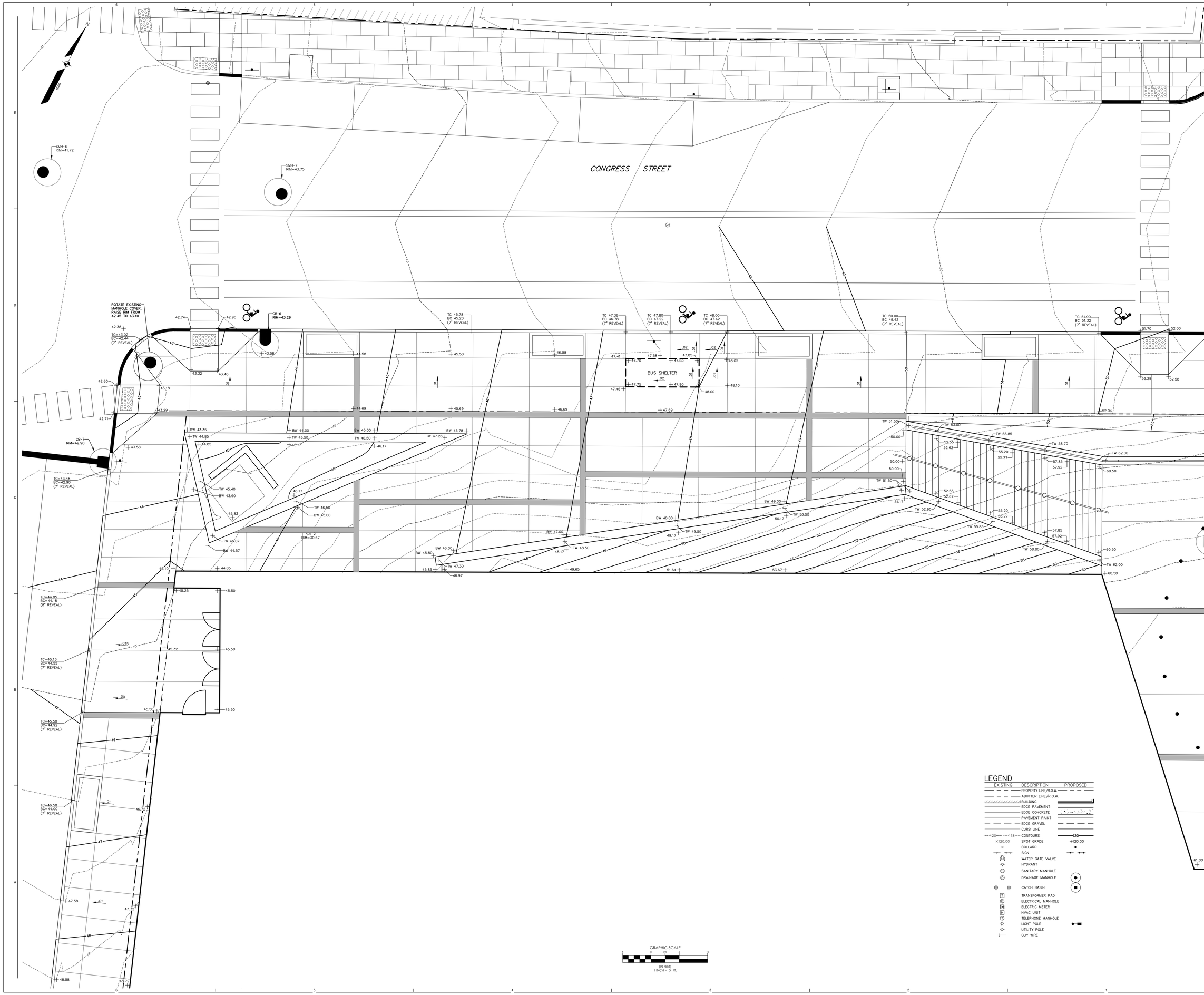
1546503.dwg, 1AB-01



LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	BUILDING	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
120 118	CONTOURS	120
×120.00	SPOT GRADE	+120.00
	BOLLARD	
	SIGN	
	WATER GATE VALVE	
	HYDRANT	
	SANITARY MANHOLE	
	DRAINAGE MANHOLE	
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	ELECTRIC METER	
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MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

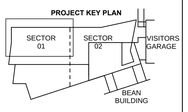
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

STATE OF MAINE
DANIEL L. RILEY
No. 14867
LICENSED
PROFESSIONAL ENGINEER
12-10-18

KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

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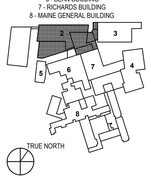

RESUBMIT TO CITY
DECEMBER 10, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	DLR

TITLE

GRADING PLAN, LOWER CONGRESS, CONGRESS STREET EXPANSION

SHEET NUMBER

C40-02

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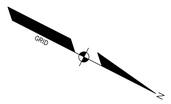

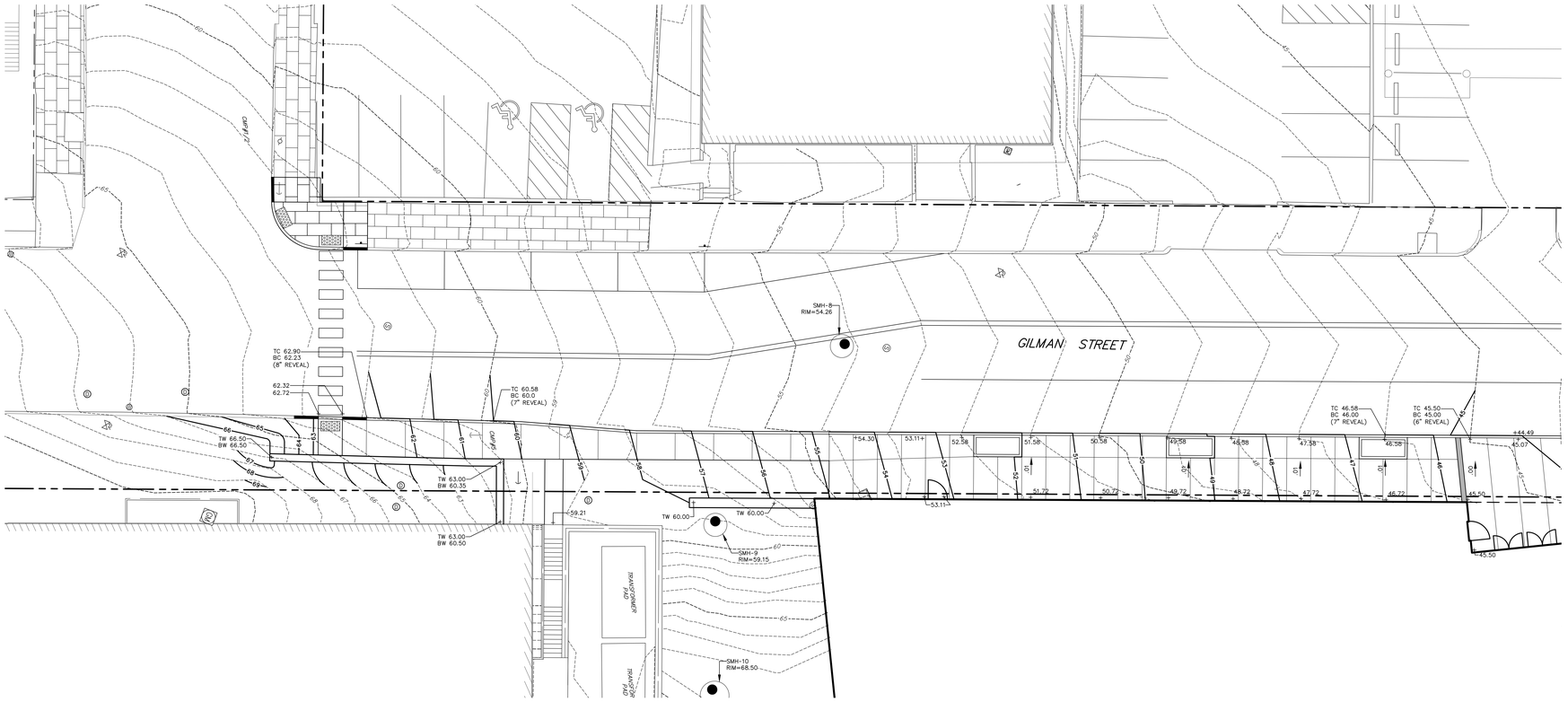

GRAPHIC SCALE

(IN FEET)
1 INCH = 10 FT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	BUILDING	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
120 118	CONTOURS	120
×120.00	SPOT GRADE	+120.00
	BOLLARD	
	SIGN	
	WATER GATE VALVE	
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COST ESTIMATOR
D.G. Jones International
3 Baldwin Green Common,Suite 202, Woburn, MA 01801

MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

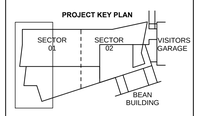
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

STATE OF MAINE
DANIEL L. RILEY
No. 14607
LICENSED
PROFESSIONAL ENGINEER
12-10-18

KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

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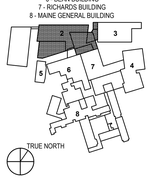
8 - MAINE GENERAL BUILDING



RESUBMIT TO CITY
DECEMBER 10, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	DLR

TITLE

GRADING PLAN, GILMAN STREET, CONGRESS STREET EXPANSION

SHEET NUMBER

C40-03

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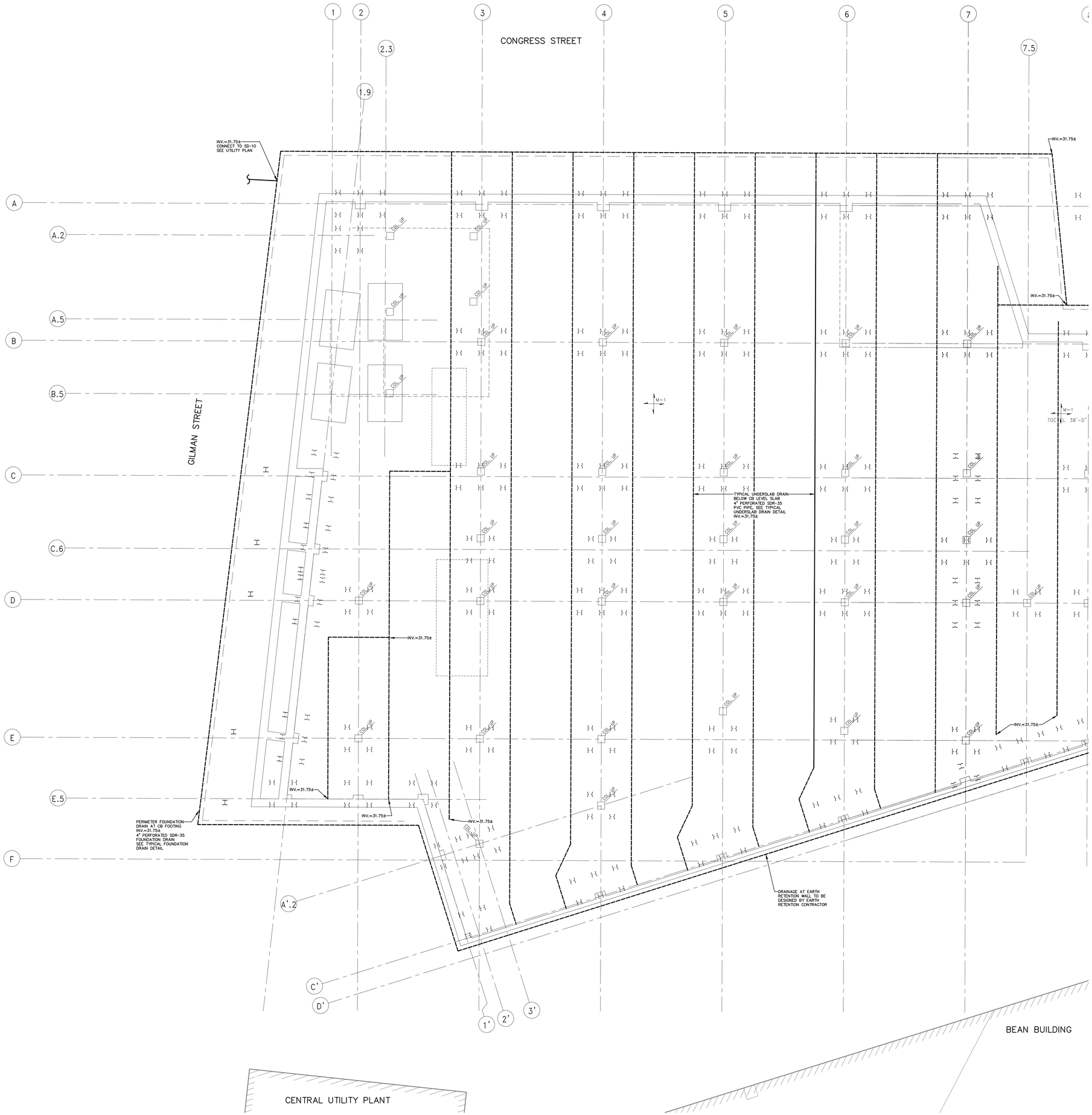

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Portland, ME 04102

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D.G. Jones International
3 Baldwin Green Common,Suite 202, Woburn, MA 01801

MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

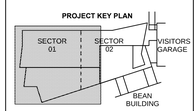
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

STATE OF MAINE
DANIEL L. RILEY
No. 14667
LICENSED
PROFESSIONAL ENGINEER
9/25/18

KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

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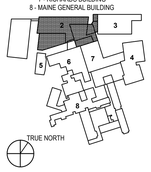

CITY SUBMISSION
SEPTEMBER 25, 2018

NO	ISSUE	DATE
1	CITY SUBMISSION	9/25/2018

Job Number	152189.000
Drawn	MAL/MAM
Checked	DLR
Approved	DLR

TITLE

LEVEL B FOUNDATION DRAINAGE PLAN, SECTOR 1 CONGRESS STREET EXPANSION

SHEET NUMBER

C10-11

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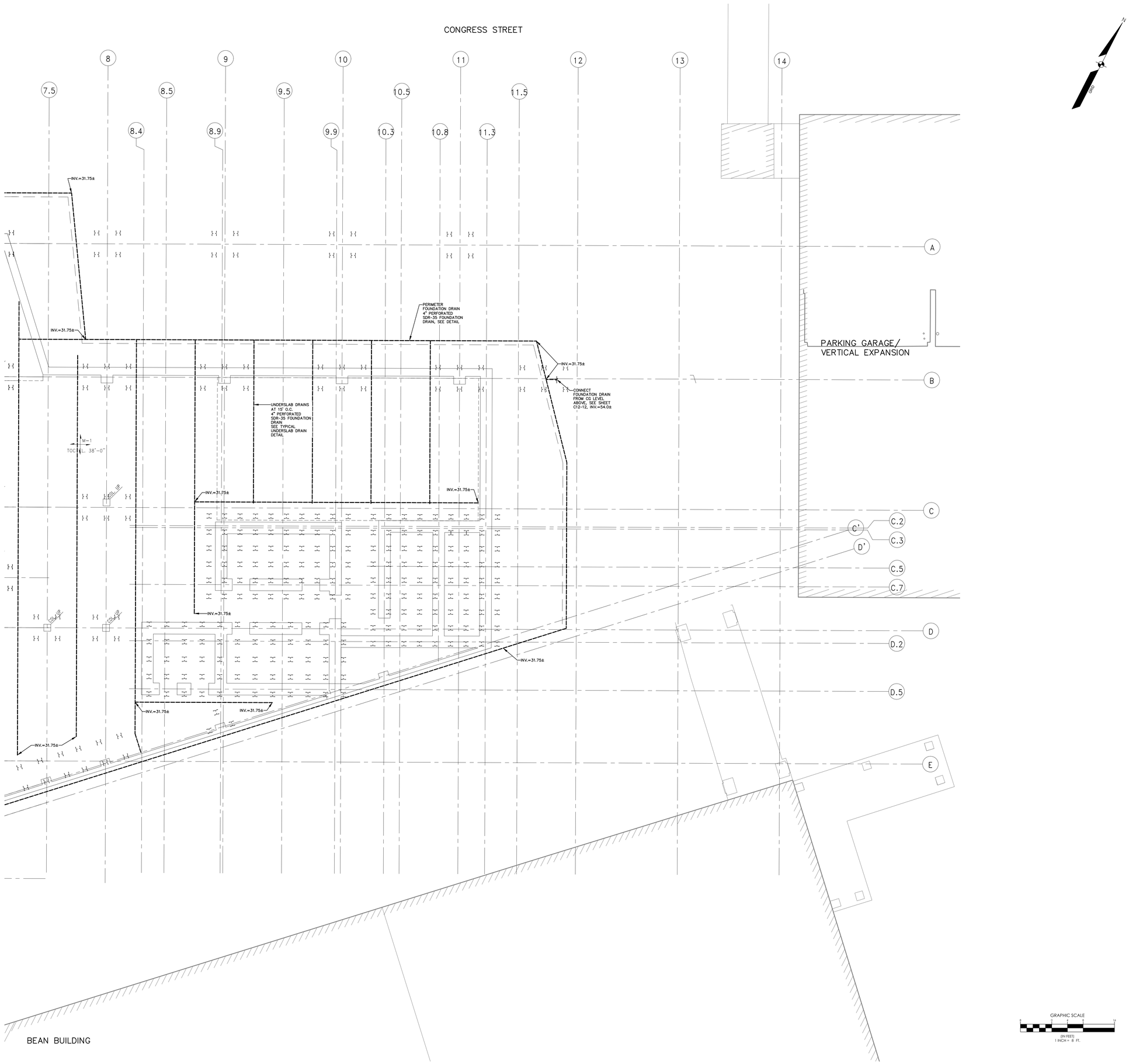

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MaineHealth

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MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

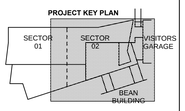
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

STATE OF MAINE
DANIEL L. RILEY
No. 14697
LICENSED PROFESSIONAL ENGINEER
9/25/18

KEY PLANS

PROJECT KEY PLAN



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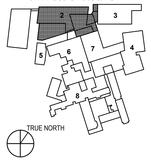

CITY SUBMISSION
SEPTEMBER 25, 2018

NO	ISSUE	DATE
1	CITY SUBMISSION	9/25/2018

Job Number	152189.000
Drawn	MAL/MAM
Checked	DLR
Approved	DLR

TITLE
LEVEL B FOUNDATION DRAINAGE PLAN, SECTOR 2 CONGRESS STREET EXPANSION

SHEET NUMBER

C10-12

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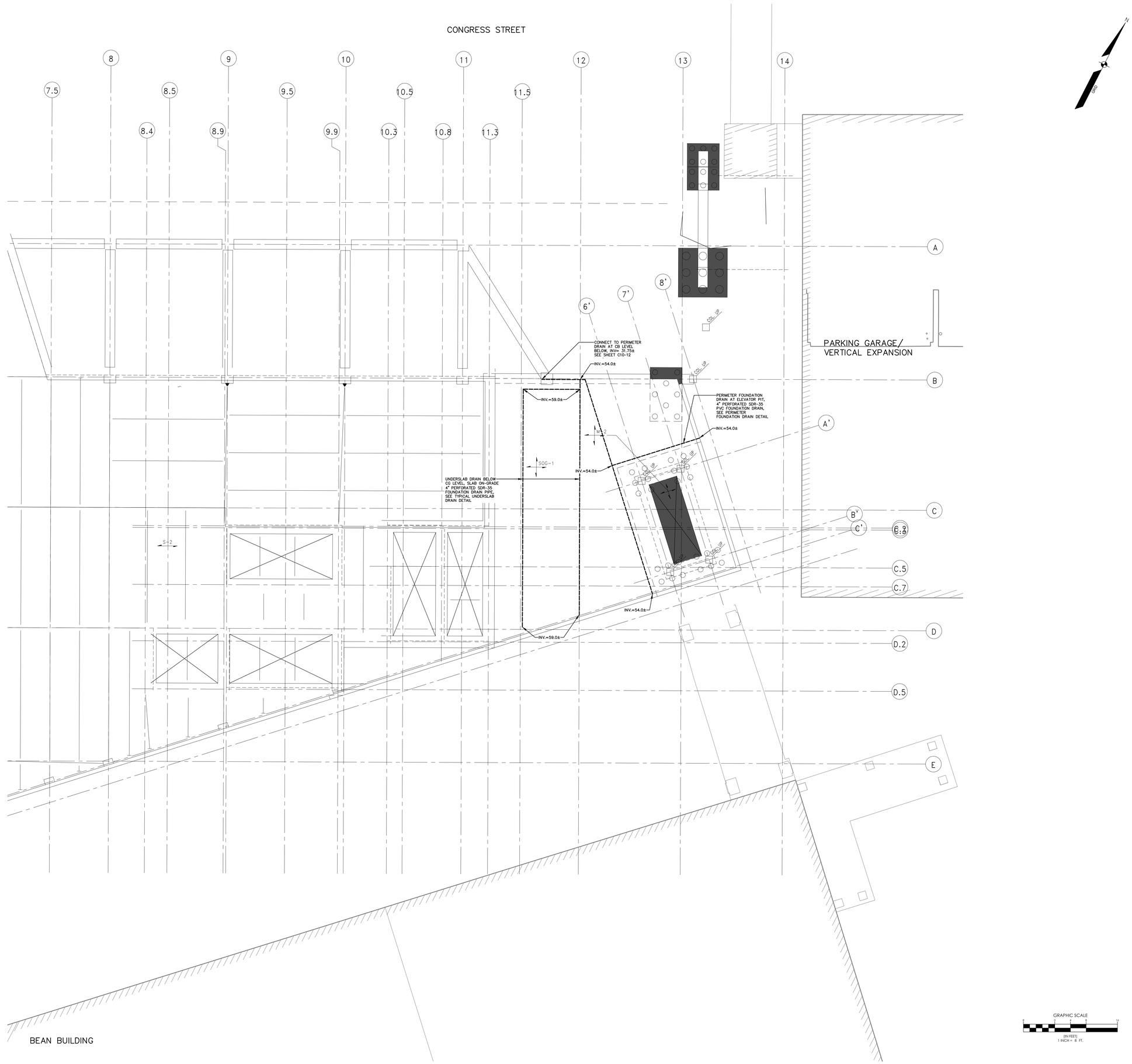

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CLIENT

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COST ESTIMATOR
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MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

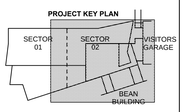
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

STATE OF MAINE
DANIEL L. RILEY
No. 14697
LICENSED PROFESSIONAL ENGINEER
9/25/18

KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

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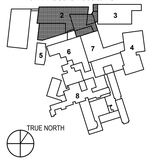

CITY SUBMISSION
SEPTEMBER 25, 2018

NO	ISSUE	DATE
1	CITY SUBMISSION	9/25/2018

Job Number	152189.000
Drawn	MAL/MAM
Checked	DLR
Approved	DLR

TITLE
LEVEL 1 FOUNDATION DRAINAGE PLAN, SECTOR 2 CONGRESS STREET EXPANSION

SHEET NUMBER

C12-12

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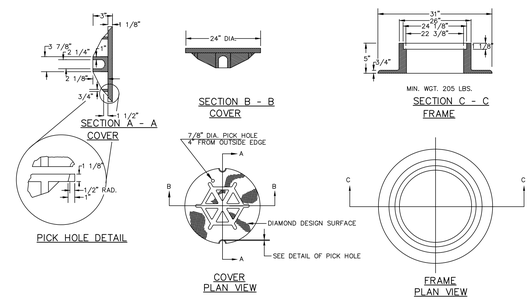
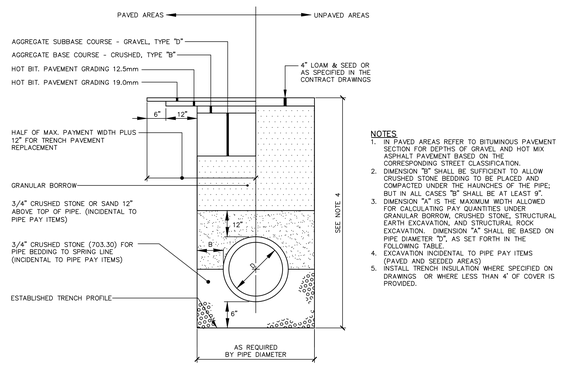
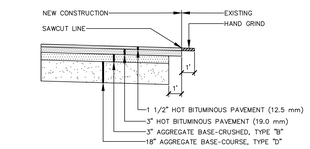


TYPICAL "A" CAST IRON MANHOLE COVER AND FRAME
NOT TO SCALE

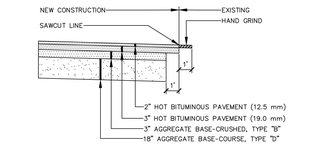


NOTES
1. IN PAVED AREAS REFER TO BITUMINOUS PAVEMENT SECTION FOR DEPTHS OF GRAVEL AND HOT MIX ASPHALT PAVEMENT BASED ON THE CORRESPONDING STREET CLASSIFICATION.
2. DIMENSION "B" SHALL BE SUFFICIENT TO ALLOW CRUSHED STONE BEDDING TO BE PLACED AND COMPACTED UNDER THE HAUNCHES OF THE PIPE; BUT IN ALL CASES "B" SHALL BE AT LEAST 9".
3. DIMENSION "A" IS THE MAXIMUM WIDTH ALLOWED FOR CALCULATING PAY QUANTITIES UNDER GRANULAR BORROW, CRUSHED STONE, STRUCTURAL EARTH EXCAVATION, AND STRUCTURAL ROCK EXCAVATION. DIMENSION "A" SHALL BE BASED ON PIPE DIAMETER "D", AS SET FORTH IN THE FOLLOWING TABLE.
4. EXCAVATION INCIDENTAL TO PIPE PAY ITEMS (PAVED AND SEEDED AREAS)
5. INSTALL TRENCH INSULATION WHERE SPECIFIED ON DRAWINGS OR WHERE LESS THAN 4' OF COVER IS PROVIDED.

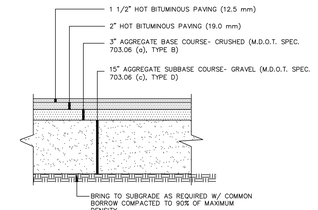
TYPICAL PIPE INSTALLATION DETAIL
NOT TO SCALE



PAVEMENT BUTT JOINT (LOCAL STREET)
NOT TO SCALE

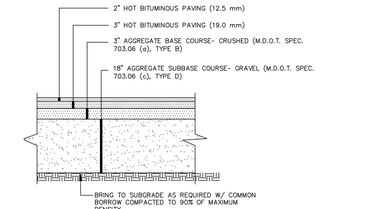


PAVEMENT BUTT JOINT (CONGRESS STREET)
NOT TO SCALE



NOTES:
1. COMPACT GRAVEL SUBBASE, BASE COURSE TO 95% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

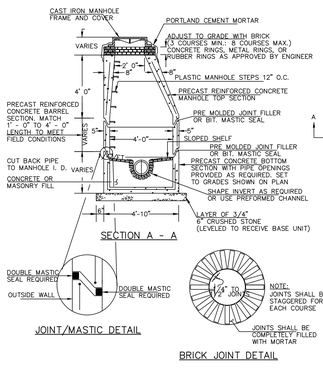
TYPICAL ROADWAY SECTION (LOCAL STREET)
NOT TO SCALE



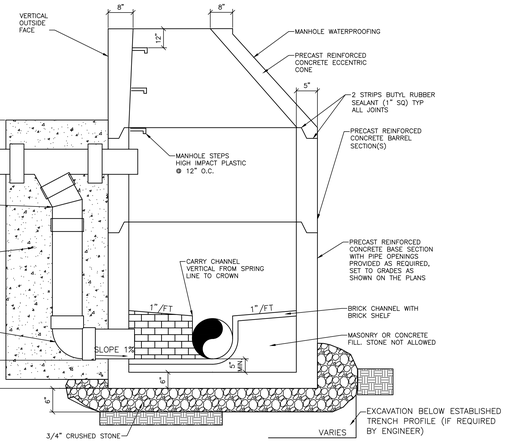
NOTES:
1. COMPACT GRAVEL SUBBASE, BASE COURSE TO 95% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

TYPICAL ROADWAY SECTION - CONGRESS STREET
NOT TO SCALE

NOTE:
MANHOLE CHANNELS REQUIRING CHANGE OF ALIGNMENT, TO BE BUILT ON SMOOTH RADIUS. CHANNEL TO BE SHAPED TO ACCEPT ADDITIONAL INLET PIPES.



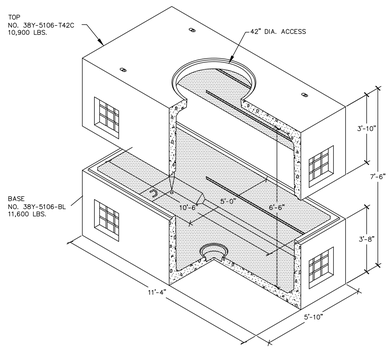
PRECAST CONCRETE MANHOLE TYPE "A"
NOT TO SCALE



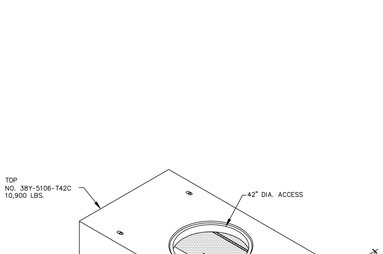
NOTES:

1. MANHOLE CHANNELS REQUIRING CHANGE IN ALIGNMENT ARE TO BE BUILT ON A SMOOTH RADIUS. IF SIDE PIPES ENTER CHANNEL, SHAPE TO RECEIVE ADDED SIDE FLOW.
2. USE FLAT SLAB TOP MANHOLE WHEN THE DIFFERENCE BETWEEN INVERT AND RIM IS LESS THAN 6'-0" AND WHEN MANHOLE DIAMETER IS GREATER THAN 4'-0".
3. ALL BACKFILL WITHIN 3 FEET OF STRUCTURE SHALL BE SELECT FILL PLACED IN 8" MAXIMUM LIFTS.

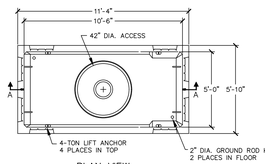
OUTSIDE DROP SANITARY MANHOLE DETAIL
NOT TO SCALE



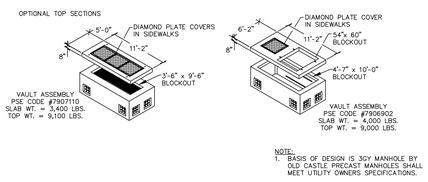
ELECTRICAL & TELECOMMUNICATIONS MANHOLE
NOT TO SCALE



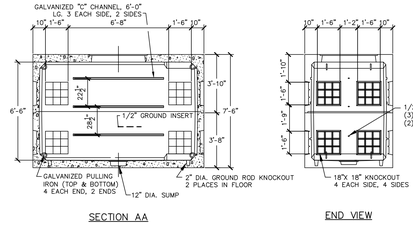
TYPICAL DUCT BANK CROSS-SECTION
NOT TO SCALE



PLAN VIEW

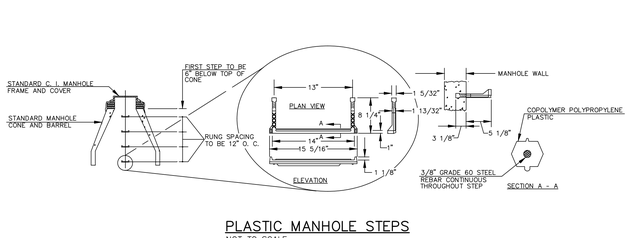


NOTE:
1. BASIS OF DESIGN IS 3GY MANHOLE BY OLD CASTLE PRECAST MANHOLES SHALL MEET UTILITY OWNERS SPECIFICATIONS.

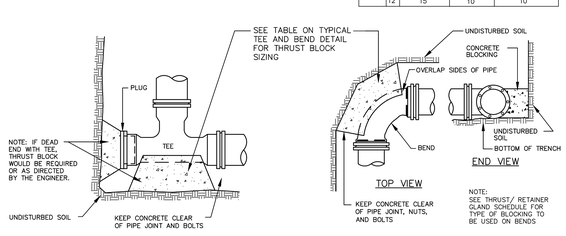


SECTION AA

END VIEW



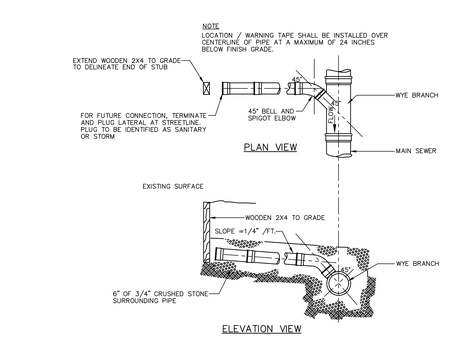
PLASTIC MANHOLE STEPS
NOT TO SCALE



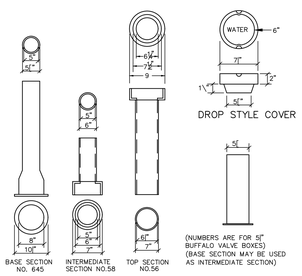
NOTE:
SEE THRUST/ RETAINER GLAND SCHEDULE FOR TYPE OF BLOCKING TO BE USED ON BENDS

TEE & BEND BLOCKING
NOT TO SCALE

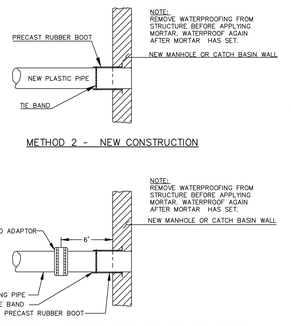
CONCRETE THRUST BLOCK SIZE REQUIREMENTS				
		SQ. FT. OF BEARING ON UNDISTURBED SOIL		
FITTINGS		90° BENDS	45° BENDS	TEES AND PLUGS
PIPE SIZE	6"	4.0	2.0	3.0
	8"	8.0	4.0	6.0
	12"	15	10	10

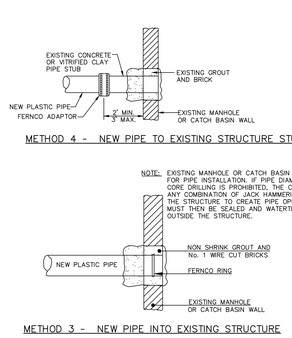


TYPICAL SEWER LATERAL WYE CONNECTION
NOT TO SCALE



VALVE BOX & COVER
NOT TO SCALE





PLASTIC PIPE CONNECTION
NOT TO SCALE

TABLE OF DIMENSIONS
PVC, TRUSS, CMP, & POLYETHYLENE PIPE

D	A	B	C	VOL. BASE /100' UNSHEETED O. D. SOCKET
8"	3'- 0"	1'- 1 1/2"	0'- 1'2"	7,358 10 3/8"
10"	3'- 0"	1'- 0 3/8"	0'- 0 5/8"	7,638 12 1/2"
12"	3'- 0"	0'- 11 3/8"	0'- 0 5/8"	7,932 14 1/2"
14"	3'- 0"	0'- 10 3/8"	0'- 0 5/8"	8,178 16 3/4"
16"	3'- 0"	0'- 9 1/4"	0'- 0 3/4"	8,447 19"
18"	3'- 0"	0'- 8 1/4"	0'- 0 3/4"	8,663 21 1/8"
20"	3'- 0"	0'- 7 3/8"	0'- 0 3/4"	8,815 23 3/8"
24"	3'- 1 3/4"	0'- 6"	0'- 0 7/8"	9,633 27 3/4"
27"	3'- 5 1/4"	0'- 6"	0'- 1 1/8"	10,959 31 1/8"
30"	3'- 8 1/4"	0'- 6"	0'- 1 1/8"	12,156 34 1/2"
33"	3'- 11 1/4"	0'- 6"	0'- 1 3/8"	13,513 38 1/8"
36"	4'- 2 3/4"	0'- 6"	0'- 1 3/8"	14,910

A = WIDTH OF UNSHEETED TRENCH

TABLE OF DIMENSIONS
REINFORCED CONCRETE PIPE

D	A	B	C	VOL. BASE /100' UNSHEETED O. D. BELL
12"	3'- 0"	0'- 10"	0'-2"	8,319 20 1/4"
15"	3'- 0"	0'- 8 1/4"	0'- 2 1/4"	8,626 24 3/8"
18"	3'- 0"	0'- 6 1/2"	0'- 2 1/4"	8,925 28"
21"	3'- 0 1/2"	0'- 6"	0'-2 3/4"	9,266 31 7/8"
24"	3'- 6"	0'- 6"	0'- 3"	11,233 35 3/4"
27"	3'- 9 1/2"	0'- 6"	0'- 3 1/4"	12,650
30"	4'- 1"	0'- 6"	0'- 3 1/2"	14,120
33"	4'- 4 1/2"	0'- 6"	0'- 3 3/4"	15,722
36"	4'- 8"	0'- 6"	0'- 4"	17,336
42"	5'- 3"	0'- 6"	0'- 4 1/2"	20,726
48"	5'- 10"	0'- 6"	0'- 5"	24,454
54"	6'- 5"	0'- 6"	0'- 5 1/2"	28,404
60"	7'- 0"	0'- 6"	0'- 6"	32,607
66"	7'- 7"	0'- 6"	0'- 6 1/2"	37,074
72"	8'- 2"	0'- 6"	0'- 7"	41,886
78"	8'- 9"	0'- 6"	0'- 7 1/2"	46,881
84"	9'- 4"	0'- 6"	0'- 8"	52,145
90"	9'- 11"	0'- 6"	0'- 8 1/2"	57,769
96"	10'-6"	0'- 6"	0'- 9"	63,552

27 in. THROUGH 96 in. INCLUSIVE - TONGUE & GROOVE JOINTS

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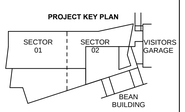
41 Seyon Street, Building 1, Suite 500,
Waltham, MA 02453
MEPFP ENGINEER/CODE/LOW VOLTAGE
AKF Group LLC
99 Bedford Street, 2nd Floor, Boston, MA 02111
CONSTRUCTION MANAGER
TURNER CONSTRUCTION
2 Seaport Lane, Suite 200, Boston, MA 02210
ELEVATOR CONSULTANT
VDA (Van Deusen & Associates)
101 Summer Street, 4th Floor, Boston, MA 02110
COST ESTIMATOR
D.G. Jones International
3 Baldwin Green Common,Suite 202, Woburn, MA 01801
MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

PROJECT TITLE
Congress Street Building
22 Bramhall Street
Portland ME 04102

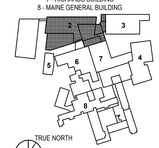
STATE OF MAINE — DANIEL L RILEY No. 11527 — PROFESSIONAL ENGINEER — 11-27-18

KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN
1 - NOT USED
2 - CONGRESS STREET
3 - VISITOR GARAGE
4 - EAST TOWER
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



TRUE NORTH

RESUBMIT TO CITY
NOVEMBER 27, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL/MAM
Checked	DLR
Approved	DLR

TITLE
DETAILS CONGRESS STREET EXPANSION

SHEET NUMBER
C30-03

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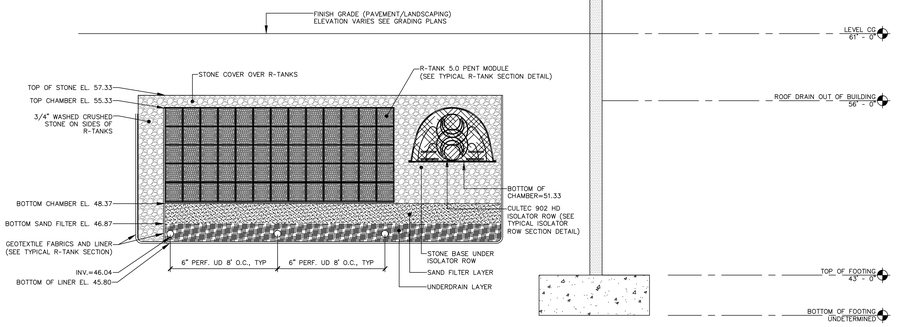
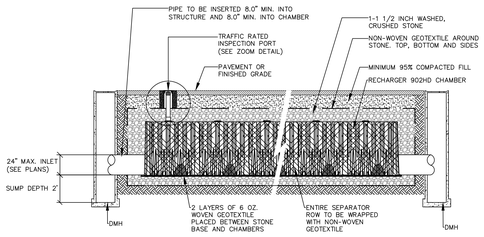
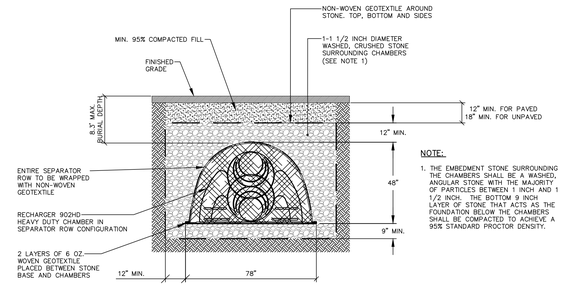
152189 - CONGRESS.dwg, 1AB.D1



SUBSURFACE SAND FILTER SECTION
NOT TO SCALE

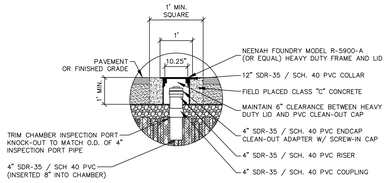


TYPICAL ISOLATOR ROW CROSS SECTION
NOT TO SCALE

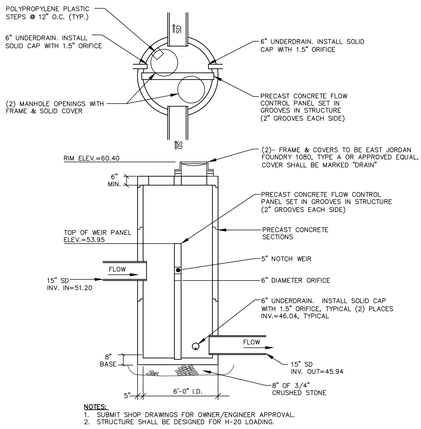


NOTE:
1. THE EMBEDMENT STONE SURROUNDING THE CHAMBERS SHALL BE A WASHED, ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN 1 INCH AND 1 1/2 INCH. THE BOTTOM 9 INCH LAYER OF STONE, THAT ACTS AS THE FOUNDATION BELOW THE CHAMBERS SHALL BE COMPACTED TO ACHIEVE A 95% STANDARD PROCTOR DENSITY.

TYPICAL ISOLATOR ROW SECTION
NOT TO SCALE

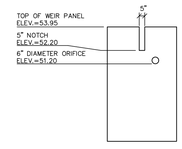


ISOLATOR ROW INSPECTION PORT
NOT TO SCALE



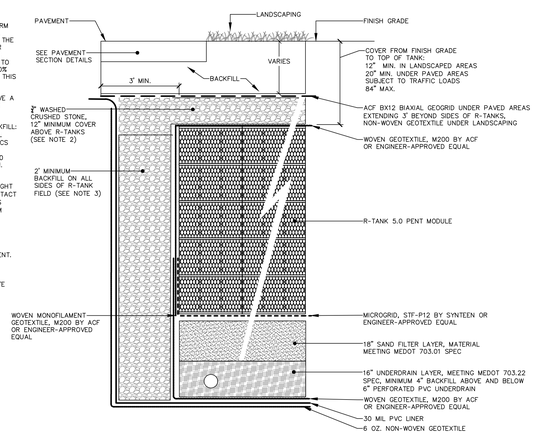
NOTES:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.

OUTLET CONTROL STRUCTURE (OCS-1)
NOT TO SCALE

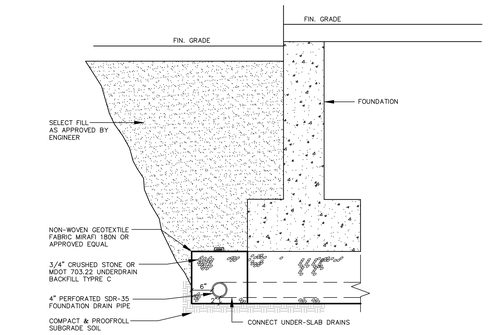


WEIR PANEL (OCS-1)
NOT TO SCALE

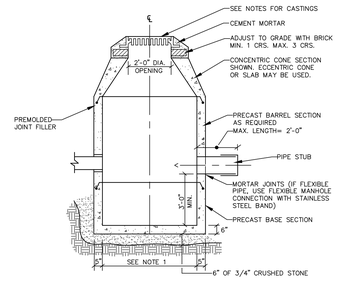
NOTES:
1. THE SAND FILTER MATERIAL SHALL BE A UNIFORM MIX, FREE OF STONES LARGER THAN 2 INCHES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS. THE MATERIAL SHALL MEET THE SPECIFICATIONS FOR MDOT AGGREGATE SAND (MDOT #703.01). THIS AGGREGATE SAND SHALL BE MIXED WITH LOAM TO ACHIEVE A MATERIAL WITH BETWEEN 8% AND 10% PASSING THE #200 SIEVE. THE LOAM USED IN THIS MIXTURE SHALL HAVE LESS THAN 2% CLAY CONTENT. THIS 18 INCH LAYER OF SAND FILTRATION MEDIA SHALL BE PLACED TO ACHIEVE A LEVEL OF COMPACTION BETWEEN 92% AND 95% STANDARD PROCTOR DENSITY.
2. FIRST 12" COVER MUST BE FREE DRAINING BACKFILL: 3/4" WASHED CRUSHED STONE. ADDITIONAL FILL MAY BE STRUCTURAL FILL: STONE OR SOIL (USCS CLASS SM, SP, SW, GM, GP OR GW) WITH MAX CLAY CONTENT<10%, MAX 25% PASSING NO. 200 SIEVE, AND MAX PLASTICITY INDEX OF 4, A MIN. 12" COVER MUST BE MAINTAINED BETWEEN BACKFILL EQUIPMENT AND THE TOP OF THE R-TANK™ SYSTEM AT ALL TIMES. TOTAL HEIGHT OF TOP BACKFILL SHOULD NOT EXCEED 7'. CONTACT ACF ENVIRONMENTAL IF MORE THAN 7' OR LESS THAN 20" OF TOP BACKFILL IS REQUIRED (FROM TOP OF TANK TO TOP OF PAVEMENT).
3. SIDE BACKFILL: 24" MIN. OF FREE DRAINING BACKFILL: STONE <1.5". MUST BE FREE FROM LUMPS, DEBRIS AND OTHER SHARP OBJECTS. SPREAD EVENLY TO PREVENT R-TANK[HD] MOVEMENT. COMPACT SIDE BACKFILL WITH POWERED MECHANICAL COMPACTOR IN 12" LIFTS.
4. FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK MODULE SHEET.



TYPICAL R-TANK[HD] SECTION
NOT TO SCALE

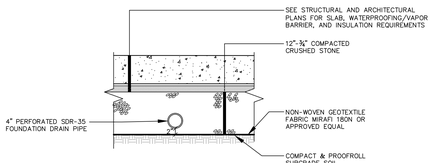


TYPICAL PERIMETER FOUNDATION DRAIN
NOT TO SCALE

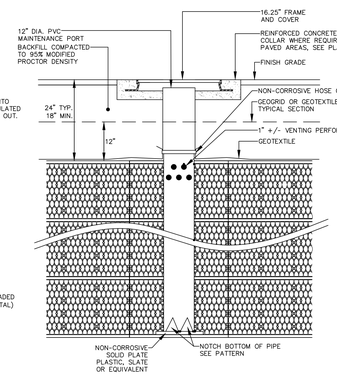


NOTES:
1. 4'-0" I.D. TYPICAL. SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. CATCH BASIN FRAME AND GRATE TO BE NEENAH FOUNDRY R-2554, OR APPROVED EQUAL.

TYPICAL CATCH BASIN
NOT TO SCALE

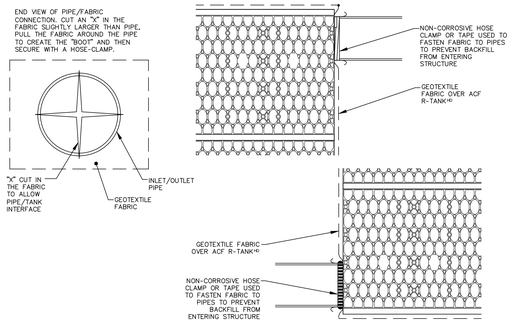


TYPICAL UNDER SLAB DRAIN
NOT TO SCALE

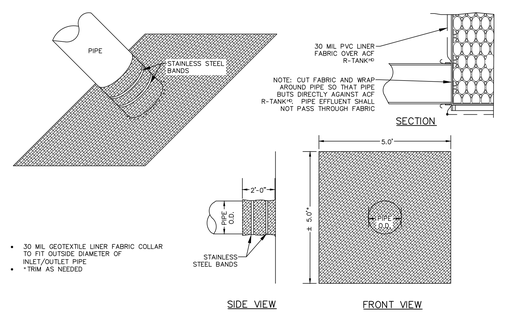


MAINTENANCE PORT
THIS PORT IS USED TO PUMP WATER INTO THE SYSTEM AND RE-SUSPEND ACCUMULATED SEDIMENT SO THAT IT MAY BE PUMPED OUT.

R-TANK[HD] TYPICAL MAINTENANCE PORT
NOT TO SCALE



R-TANK[HD] TYPICAL TANK INLET/OUTLET DETAIL
NOT TO SCALE



- 30 MIL GEOTEXTILE LINER FABRIC COLLAR TO FIT OUTSIDE DIAMETER OF INLET/OUTLET PIPE
- *TRIM AS NEEDED

SIDE VIEW FRONT VIEW

GEOTEXTILE PIPE BOOT FOR R-TANK[HD]
NOT TO SCALE

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PROJECT TITLE
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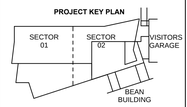
Portland ME 04102

STATE OF MAINE
DANIEL L. RILEY
No. 9999
PROFESSIONAL ENGINEER
11-27-18

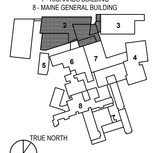
KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

1 - NOT USED
2 - CONGRESS STREET
3 - VISITOR GARAGE
4 - EAST TOWER
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



RESUBMIT TO CITY
NOVEMBER 27, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL/MAM
Checked	DLR
Approved	DLR

TITLE
DETAILS STORMWATER SYSTEM CONGRESS STREET EXPANSION

SHEET NUMBER
C30-04

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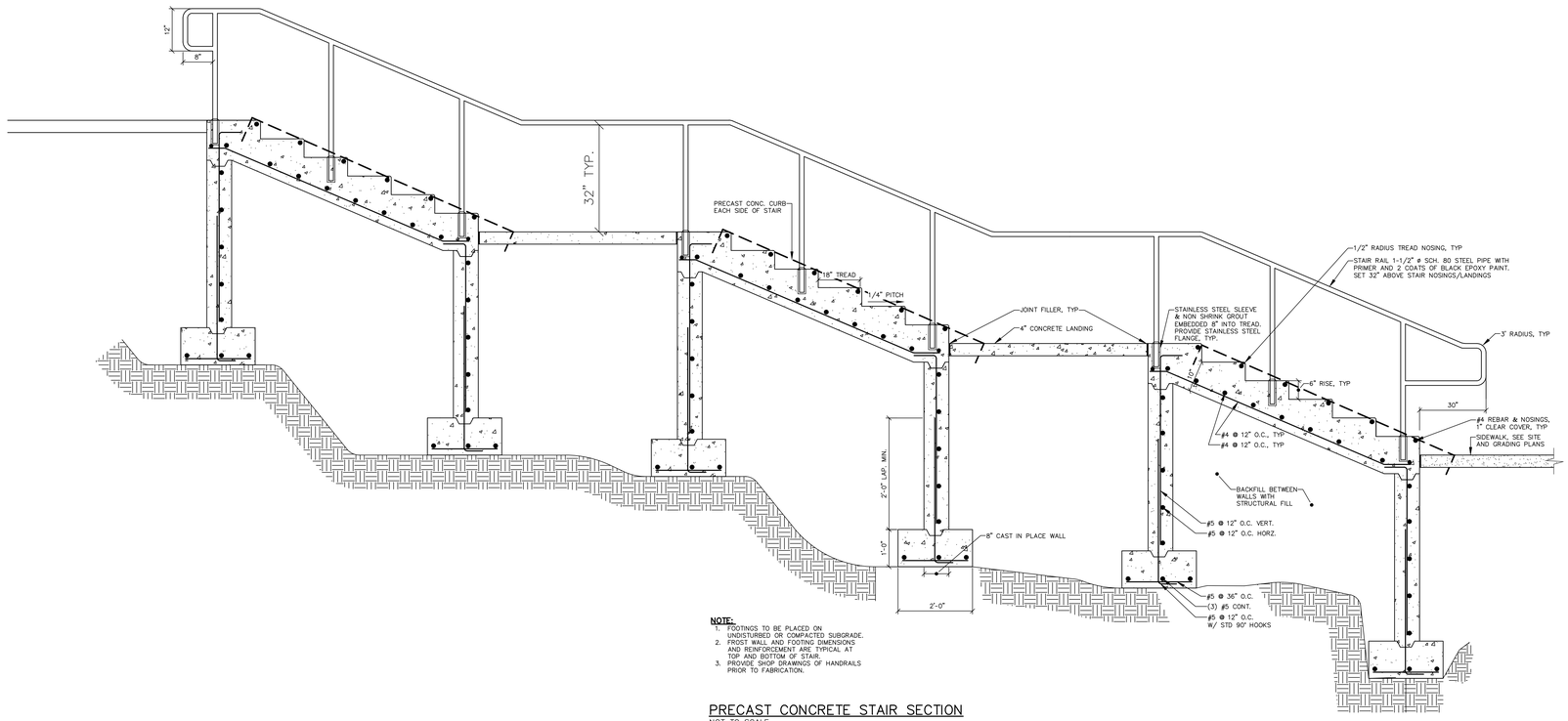

NOTE:
1. FOOTINGS TO BE PLACED ON UNDISTURBED OR COMPACTED SUBGRADE.
2. FROST WALL AND FOOTING DIMENSIONS AND REINFORCEMENT ARE TYPICAL AT TOP AND BOTTOM OF STAIR.
3. PROVIDE SHOP DRAWINGS OF HANDRAILS PRIOR TO FABRICATION.

PRECAST CONCRETE STAIR SECTION
NOT TO SCALE

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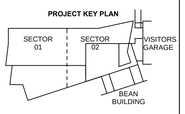
Portland ME 04102

STATE OF MAINE
DANIEL L. RILEY
No. 14667
LICENSED
PROFESSIONAL ENGINEER
9/25/18

KEY PLANS

PROJECT KEY PLAN



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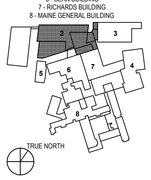

CITY SUBMISSION
SEPTEMBER 25, 2018

NO	ISSUE	DATE
1	CITY SUBMISSION	9/25/2018

Job Number	152189.000
Drawn	MAL/MAM
Checked	DLR
Approved	DLR

TITLE
DETAILS
STAIR SECTION
CONGRESS STREET EXPANSION

SHEET NUMBER

C30-05

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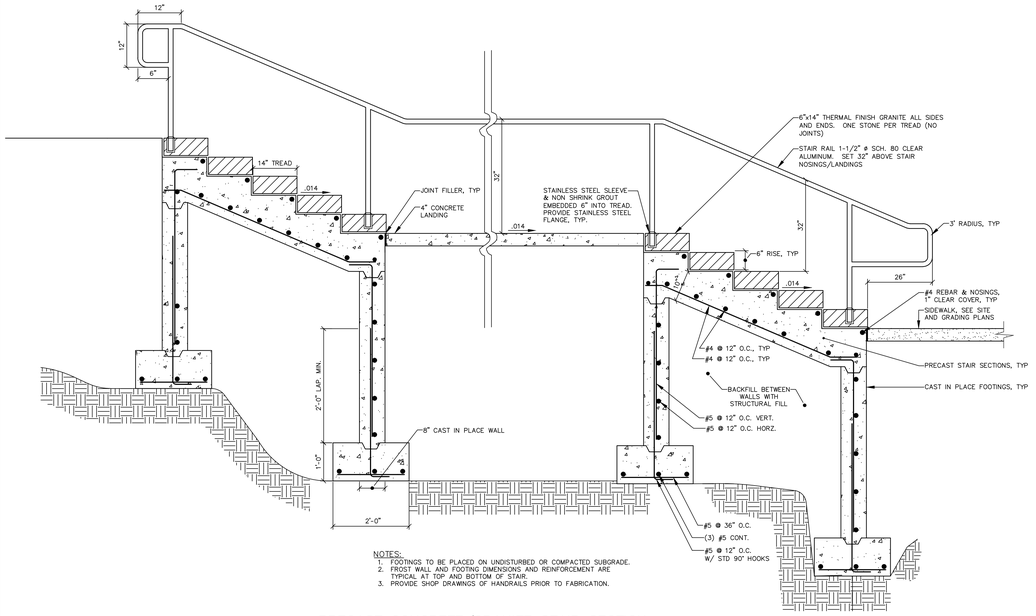
154660-CONGRESS.dwg, TAB: WALLS



NOTES:
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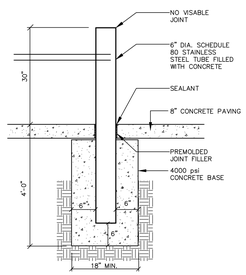
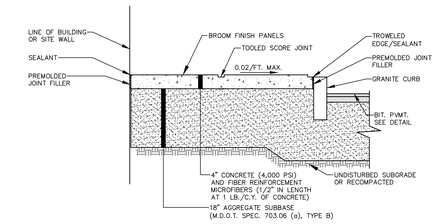
3. PROVIDE SHOP DRAWINGS OF HANDRAILS PRIOR TO FABRICATION.

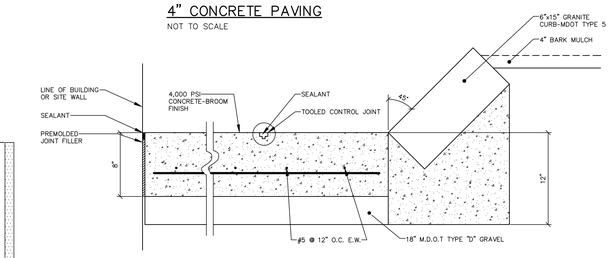
PRECAST CONCRETE/GRANITE STAIR SECTION
NOT TO SCALE



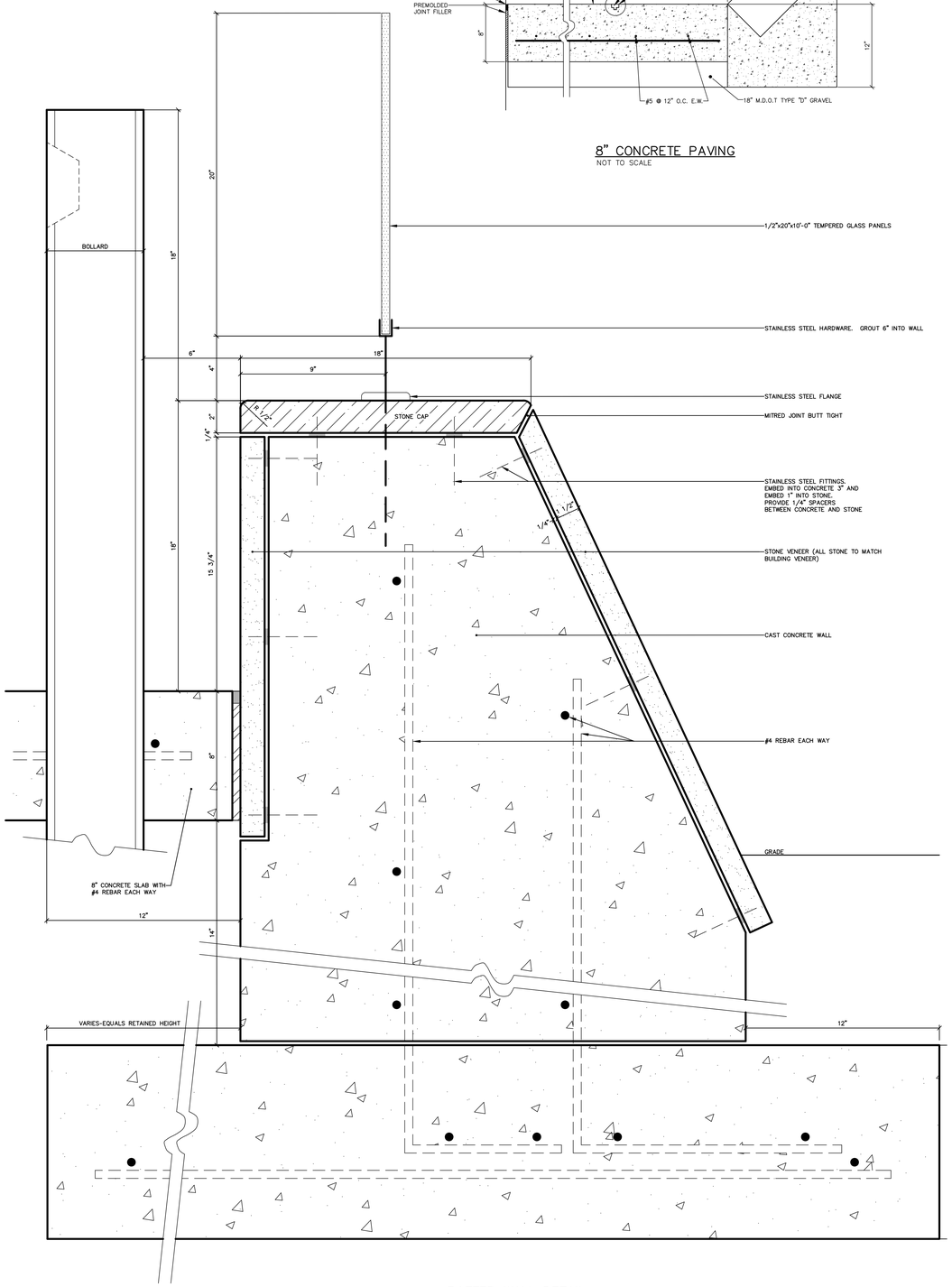
STAINLESS STEEL BOLLARD
NOT TO SCALE

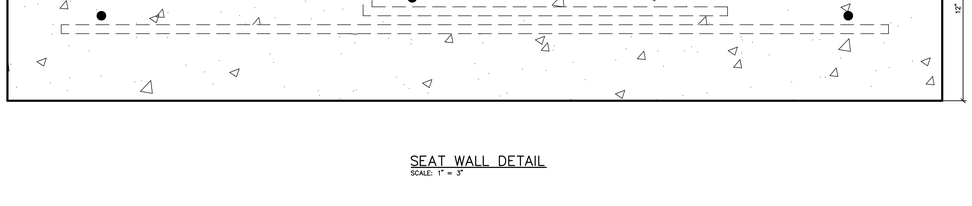


4" CONCRETE PAVING
NOT TO SCALE



8" CONCRETE PAVING
NOT TO SCALE





SEAT WALL DETAIL
SCALE: 1" = 3"

BATTER WALL DETAIL
SCALE: 1" = 3"

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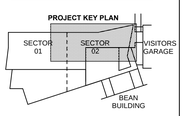
Portland ME 04102

KEY PLANS

PROJECT KEY PLAN



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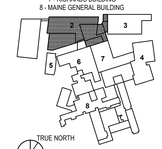

CITY SUBMISSION
SEPTEMBER 25, 2018

NO	ISSUE	DATE
1	CITY SUBMISSION	9/25/2018

Job Number	152189.000
Drawn	JAR
Checked	WTC
Approved	DLR

TITLE

WALL DETAILS UPPER/LOWER PLAZA CONGRESS STREET EXPANSION

SHEET NUMBER

C30-06

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152465\-WALL.dwg, TAB: WALL

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.

PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROWS. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

DURING CONSTRUCTION

1. INSPECTION AND CORRECTIVE ACTION:
   INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL). AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.
2. MAINTENANCE:
   IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPS OR SIGNIFICANT REPAIR OF BMPS ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.
3. DOCUMENTATION:
   KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, AND THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN.

   THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

POST-CONSTRUCTION

1. PLAN:
   CARRY OUT AN APPROVED INSPECTION AND MAINTENANCE PLAN THAT IS CONSISTENT WITH THE MINIMUM REQUIREMENTS OF THIS SECTION. THE PLAN MUST ADDRESS INSPECTION AND MAINTENANCE OF THE PROJECTS PERMANENT EROSION CONTROL MEASURES AND STORMWATER MANAGEMENT SYSTEMS. THE PLAN MAY BE COMBINED WITH THE PLAN LISTED IN SECTION 2(A) OF THIS APPENDIX. SEE SECTION 7(C)(2) FOR SUBMISSION REQUIREMENTS.
2. INSPECTION AND MAINTENANCE:
   ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS. THE FOLLOWING FACILITIES, AND MEASURES MUST BE INSPECTED AND IDENTIFIED DEFICIENCIES MUST BE CORRECTED: AREAS, FACILITIES, AND MEASURES OTHER THAN THOSE LISTED BELOW MAY ALSO REQUIRE INSPECTION ON A SPECIFIC SITE. INSPECTION OR MAINTENANCE TASKS OTHER THAN THOSE DISCUSSED BELOW MUST BE INCLUDED IN THE MAINTENANCE PLAN DEVELOPED FOR A SPECIFIC SITE.
3. REGULAR MAINTENANCE:
   CLEAR ACCUMULATIONS OF WINTER SAND IN PARKING LOTS AND ALONG ROADWAYS AT LEAST ONCE A YEAR, PREFERABLY IN THE SPRING. ACCUMULATIONS ON PAVEMENT MAY BE REMOVED BY PAVEMENT SWEEPING. ACCUMULATIONS OF SAND ALONG ROAD SHOULDERS MAY BE REMOVED BY GRADING EXCESS SAND TO THE PAVEMENT EDGE AND REMOVING IT MANUALLY OR WITH A FRONT-END LOADER. GRADING OF GRAVEL ROADS, OR GRADING OF THE GRAVEL SHOULDERS OF GRAVEL OR PAVED ROADS, MUST BE ROUTINELY PERFORMED TO ENSURE THAT STORMWATER DRAINS IMMEDIATELY OFF THE ROAD SURFACE TO ADJACENT BUFFER AREAS OR STABLE DITCHES, AND IS NOT IMPEDED BY ACCUMULATIONS OF GRADED MATERIAL ON THE ROAD SHOULDER OR BY EXCAVATION OF FALSE DITCHES IN THE SHOULDER. IF WATER BANS OR OPEN-TOP CULVERTS ARE USED TO DIVERT RUNOFF FROM ROAD SURFACES, CLEAN-OUT ANY SEDIMENTS WITHIN OR AT THE OUTLET OF THESE STRUCTURES TO RESTORE THEIR FUNCTION.
4. DOCUMENTATION:
   KEEP A LOG (REPORT) SUMMARIZING INSPECTIONS, MAINTENANCE, AND ANY CORRECTIVE ACTIONS TAKEN. THE LOG MUST INCLUDE THE DATE ON WHICH EACH INSPECTION OR MAINTENANCE TASK WAS PERFORMED, A DESCRIPTION OF THE INSPECTION FINDINGS OR MAINTENANCE COMPLETED, AND THE NAME OF THE INSPECTOR OR MAINTENANCE PERSONNEL PERFORMING THE TASK. IF A MAINTENANCE TASK REQUIRES THE CLEAN-OUT OF ANY SEDIMENTS OR DEBRIS, INDICATE WHERE THE SEDIMENT AND DEBRIS WAS DISPOSED AFTER REMOVAL. THE LOG MUST BE MADE ACCESSIBLE TO THE DEPARTMENT STAFF AND A COPY PROVIDED TO THE DEPARTMENT UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST FIVE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

EROSION CONTROL APPLICATIONS & MEASURES

THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED WITHIN THE CURRENT MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION CHAPTER 500 RULES, THE DEPARTMENTS BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET. EROSION CONTROL MEASURES MUST BE IN PLACE BEFORE THE ACTIVITY BEGINS. MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED. ADEQUATE AND TIMELY TEMPORARY AND PERMANENT STABILIZATION MEASURES MUST BE TAKEN.

1. POLLUTION PREVENTION:
   WHENEVER PRACTICABLE; NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE UNDISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE UNDISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 48 HOURS.
2. TEMPORARY MULCHING:
   ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 7 DAYS SHALL BE MULCHED. ALSO, AREAS THAT HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND DITCHES GREATER THAN 5% MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
   TYPES OF MULCH:
   HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).
   EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.
   EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
3. SOIL STOCKPILES:
   STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.
4. NATURAL RESOURCES PROTECTION:
   ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE STABILIZED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1. OF THIS SECTION) OR OTHER NON-ERODIBLE COVER WITHIN 48 HOURS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4. OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. IF DISTURBANCE TAKES PLACE LESS THAN 30 FEET FROM A PROTECTED RESOURCE AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TO THE RESOURCE, PERMETER EROSION CONTROLS MUST BE DOUBLED.
5. SEDIMENT BARRIERS:
   PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

   SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

   HAY BALES: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

   EROSION CONTROL MIX: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

   CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.
6. TEMPORARY CHECK DAMS:
   SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 85%-90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: WE DO NOT RECOMMEND THE USE OF HAY BALES AS CHECK DAMS.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

1. STORMDRAIN INLET PROTECTION:
   INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLETOR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

   HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

   CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

   MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
2. STABILIZED CONSTRUCTION EXIT:
   PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.
3. DUST CONTROL:
   DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE.
4. TEMPORARY VEGETATION:
   TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.
5. PERMANENT VEGETATION:
   REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

   SEEDBED PREPARATION:
   A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.
   B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS MUST BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P2O5-K2O OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

   C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

   APPLICATION OF SEED:
   A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDEP SEED MIX 2 IS DISPLAYED)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	0.46 LBS./1,000 S.F. (20 LBS./ACRE)
REDTOP	0.05 LBS./1,000 S.F. (2 LBS./ACRE)
TALL FESCUE	0.46 LBS./1,000 S.F. (20 LBS./ACRE)
TOTAL:	0.97 LBS./1,000 S.F. (42 LBS./ACRE)

   NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER.

   B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

   C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:

FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE INSTALLED DURING ANY NON-FROZEN PERIOD OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION:

WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 8% (12.5H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.
B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY NOVEMBER 15. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).
C. STABILIZE THE SLOPE WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF EROSION CONTROL MIX ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. DO NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 1H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

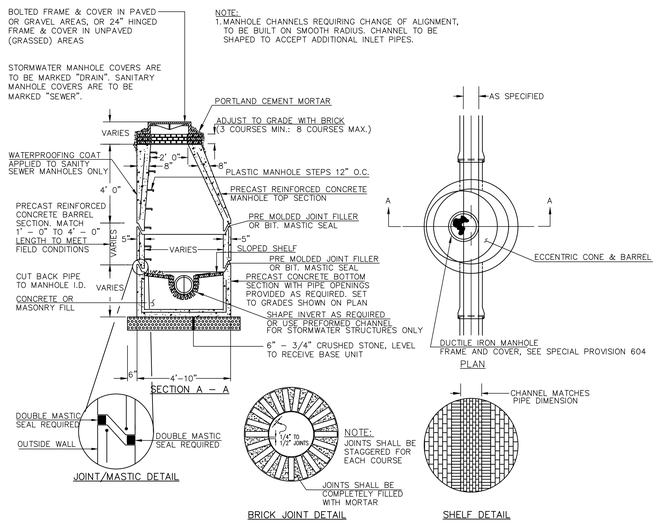
STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 8% IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER:

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.
B. STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.
D. STABILIZE THE SOIL WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A MINIMUM TWO-INCH LAYER OF EROSION CONTROL MIX ON THE SOIL BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE.

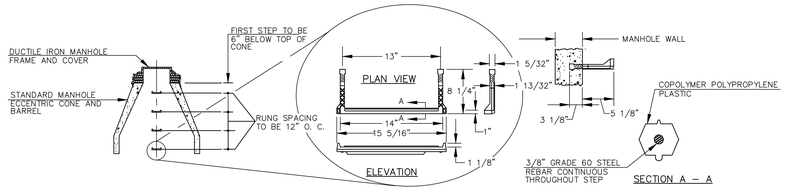
CONSTRUCTION SCHEDULE

SITE IMPROVEMENTS WILL MOST LIKELY BEGIN IN _____ DEPENDING UPON FINAL PERMIT APPROVAL. THE FOLLOWING SCHEDULE IS ANTICIPATED:

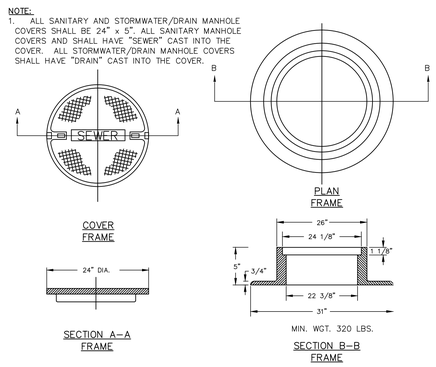
1.	ESTIMATED CONSTRUCTION TIME:	-- MONTHS
2.	EROSION CONTROL MEASURES PLACED	WEEK 1 - WEEK 2
3.	SITE CLEARING AND GRUBBING	WEEK 2 - WEEK 5
4.	CONSTRUCTION OF ROAD SUBBASE FOR ACCESS	WEEK 5 - WEEK 13
5.	STORMWATER MANAGEMENT AREA CONSTRUCTION	WEEK 7 - WEEK 9
6.	UTILITY IMPROVEMENTS AND ROADWAY CONSTRUCTION	WEEK 7 - WEEK 24
7.	MULCH SPREA



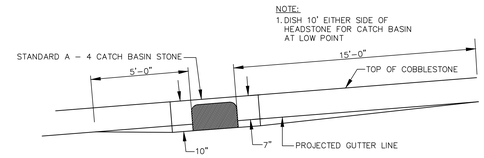
PRECAST CONCRETE MANHOLE TYPE "A"
NOT TO SCALE



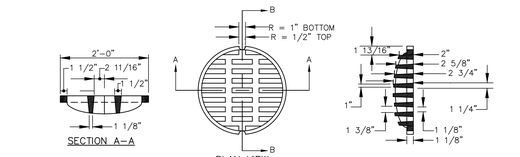
PLASTIC MANHOLE STEPS
NOT TO SCALE

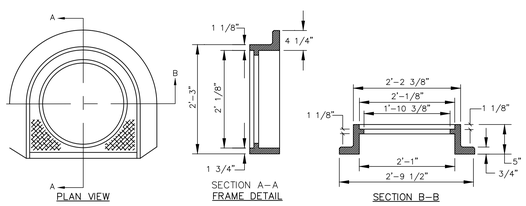


CAST IRON MANHOLE FRAME AND COVER
NOT TO SCALE

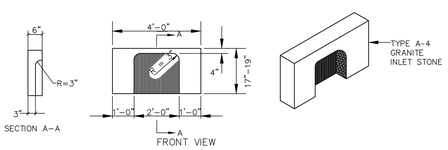


TYPICAL PAVEMENT GRADING ON SLOPES FOR CATCH BASIN & INLET
NOT TO SCALE



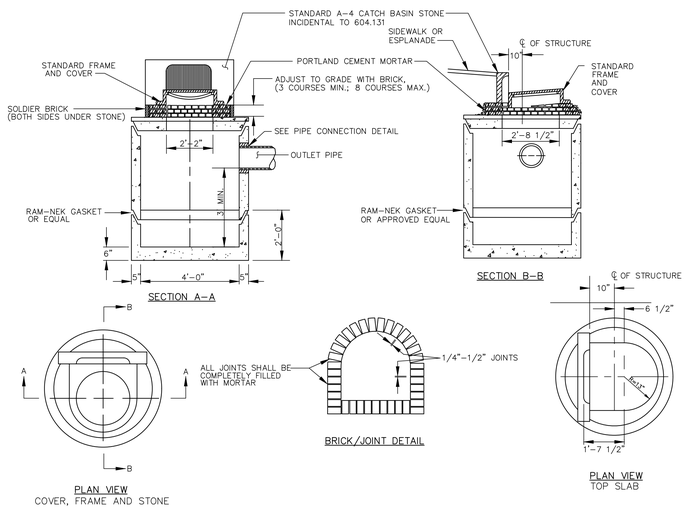


CATCH BASIN TYPE "D" - FRAME & COVER DETAIL
NOT TO SCALE



TYPE A-4 GRANITE CATCH BASIN INLET STONE DETAIL
NOT TO SCALE

NOTE:
1. TYPE D FRAME AND COVER AND TYPE A-4 GRANITE HEADSTONES ARE TO BE INSTALLED AT CATCH BASINS IN PUBLIC STREETS ONLY. SEE SHEET C30-04 FOR TYPICAL BASINS TO BE INSTALLED ON MMC PROPERTY, ENTRANCE PLAZA.



PRECAST CONCRETE CATCH BASIN - TYPE E
NOT TO SCALE

NOTE:
1. TYPE E CATCH BASINS ARE TO BE INSTALLED AT LOCATIONS IN PUBLIC STREETS ONLY. SEE SHEET C30-04 FOR TYPICAL BASINS TO BE INSTALLED ON MMC PROPERTY, ENTRANCE PLAZA.

GENERAL NOTES FOR MANHOLES & CATCH BASINS

1. ALL CONCRETE SHALL BE CLASS "A" AND HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 lbs. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C–478–67
3. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C–32–63, GRADE MA AND SA.
4. SANITARY SEWER MANHOLES SHALL HAVE A BITUMINOUS WATERPROOFING APPLIED TO THE EXTERIOR SURFACE. IF CONSTRUCTED OF BRICK MASONRY, SURFACE SHALL BE PLASTERED WITH A SMOOTH MORTAR FINISH 3/8" THICK. AFTER THE MORTAR HAS SET, THE SURFACE SHALL BE WATERPROOFED AS REQUIRED BY SUPPLEMENTAL SPECIFICATIONS SECTION 604.
5. MANHOLES MAY BE CONSTRUCTED OF MASONRY, PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
6. ALL PRECAST MANHOLES AND CATCH BASINS SHALL BE IDENTIFIED BY STATION AND OFFSET, PAINTED ON THE SIDE OF THE STRUCTURE BY THE MANUFACTURER.
7. EXISTING FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND. CONTRACTOR SHALL DELIVER TO CITY STOCKYARD AT NO COST.
8. EXISTING GRANITE COBBLE STONE AND PAVERS SHALL BE STOCKPILE BY THE CONTRACTOR, AND REUSED FOR CONSTRUCTION OF NEW COBBLE STONE GUTTER. GRANITE NOT USED SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.
9. ALL NEW CATCH BASINS IN PUBLIC STREETS SHALL RECEIVE A TYPE A–4 GRANITE INLET STONE UNLESS OTHERWISE NOTED.

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41 Seyon Street, Building 1, Suite 500,
Waltham, MA 02453
MEPFP ENGINEER/CODES/LOW VOLTAGE
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CONSTRUCTION MANAGER
TURNER CONSTRUCTION
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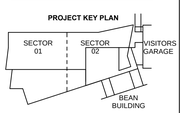
ELEVATOR CONSULTANT
VDA (Van Deusen & Associates)
101 Summer Street, 4th Floor, Boston, MA 02110
COST ESTIMATOR
D.G. Jones International
3 Baldwin Green Common,Suite 202, Woburn, MA 01801
MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

PROJECT TITLE
Congress Street Building
22 Bramhall Street
Portland ME 04102

STATE OF MAINE — DANIEL L RILEY No. 10111 — LICENSED PROFESSIONAL ENGINEER — 11-27-18

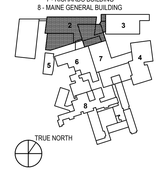
KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

1 - NOT USED
2 - CONGRESS STREET
3 - VISITOR GARAGE
4 - EAST TOWER
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



RESUBMIT TO CITY
NOVEMBER 27, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL/MAM
Checked	DLR
Approved	DLR

TITLE
DETAILS-PUBLIC SEWER AND STORM DRAIN, CONGRESS STREET EXPANSION

SHEET NUMBER
C30-08

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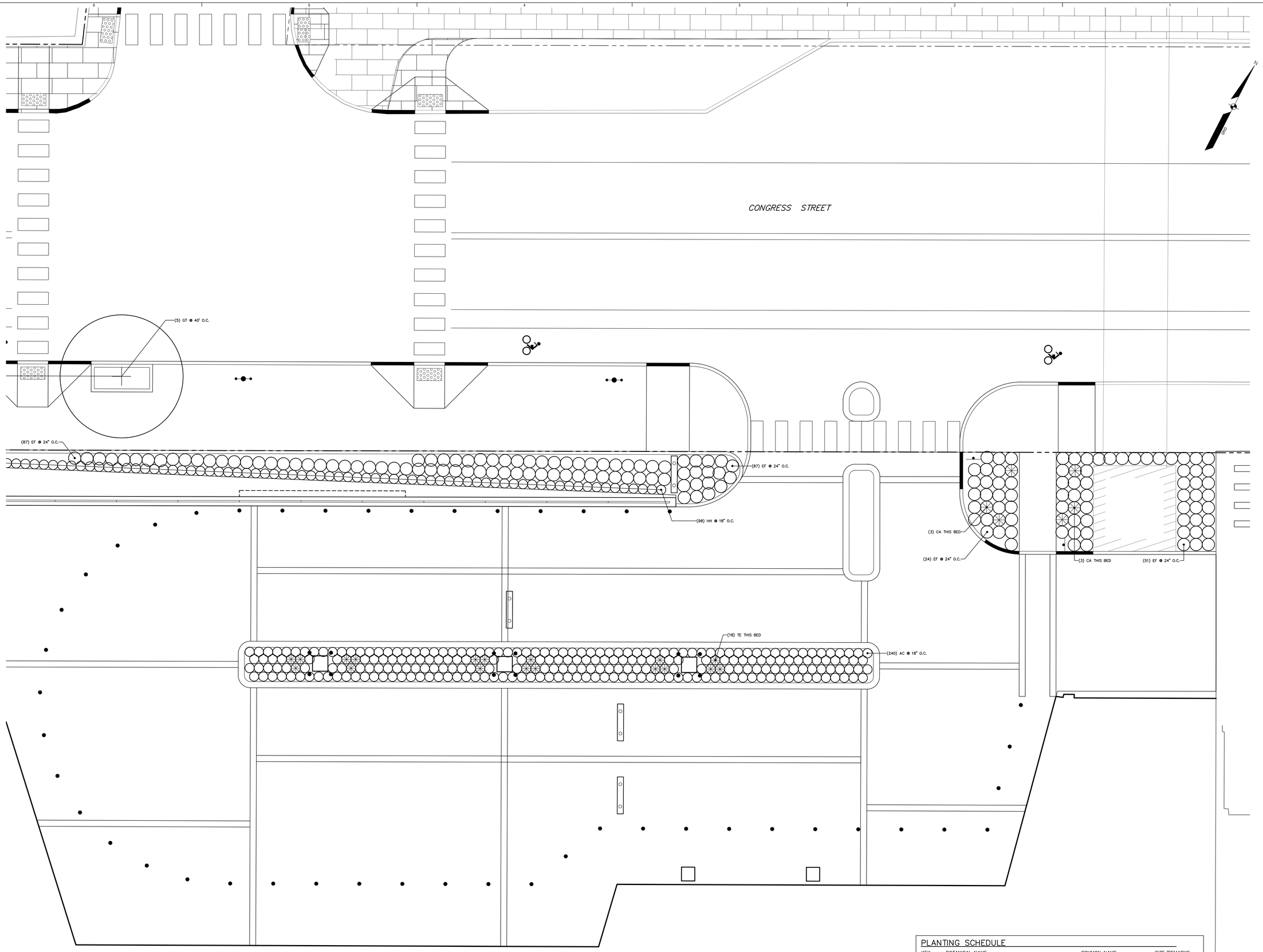
152189 - CONGRESS.dwg, 11x8.1/2



PLANTING SCHEDULE

KEY	BOTANICAL NAME	COMMON NAME	SIZE/REMARKS
GT	GLEDITSIA TRIACANTHOS INERMIS 'STREET KEEPER'	HONEYLOCUST	4 IN. CALIPER
AL	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	8'-10' HGT
EF	EUONYMUS FORTUNEI 'COLORATUS'	WINTERCREEPER	NO. 3 CONTAINER
MG	MYRICA GALE	BAYBERRY	NO. 3 CONTAINER
HH	HEDERA HELIX	ENGLISH IVY	NO. 2 CONTAINER
CA	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	REED GRASS	NO. 2 CONTAINER
AC	ASARUM CANADENSE	EUOROPEAN WILD GINGER	NO. 2 CONTAINER
TE	TRILLIUM ERECTUM	WAKE ROBIN	NO. 2 CONTAINER
VA	VACCINIUM ANGUSTIFOLIUM	LOWBUSH BLUEBERRY	NO. 1 CONTAINER

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MaineHealth

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South Portland, ME 04106

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AKF Group LLC
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ELEVATOR CONSULTANT
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COST ESTIMATOR
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3 Baldwin Green Common,Suite 202, Woburn, MA 01801

MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

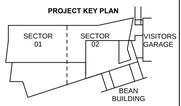
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
NA 108
STATE OF MAINE
12-10-18

KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

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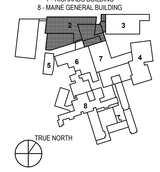
4 - EAST TOWER
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



RESUBMIT TO CITY
DECEMBER 10, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	DLR

TITLE
LANDSCAPE PLAN, UPPER CONGRESS, CONGRESS STREET EXPANSION

SHEET NUMBER
C50-01

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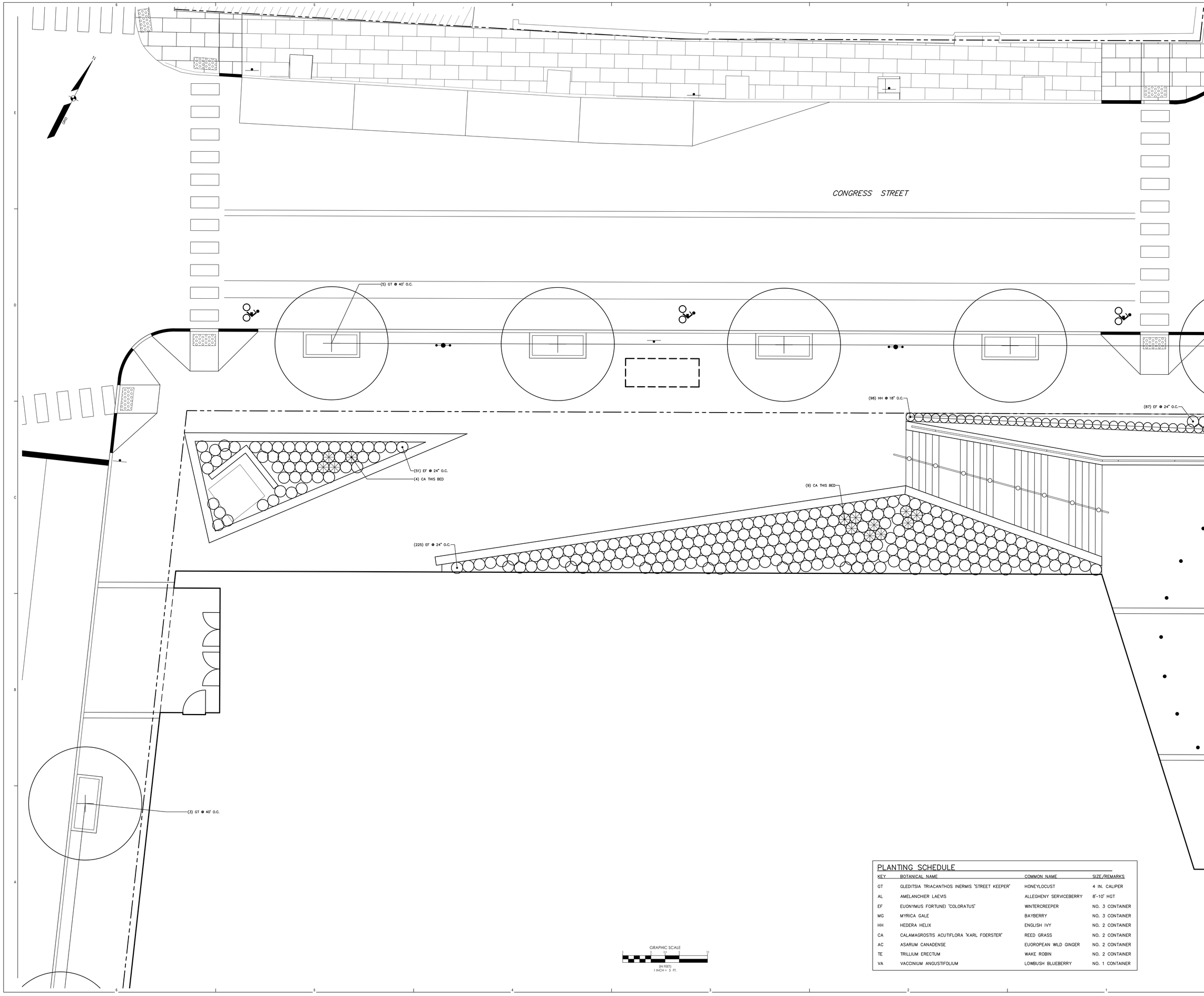
154661.3.dwg, TAB: (1)



PLANTING SCHEDULE

KEY	BOTANICAL NAME	COMMON NAME	SIZE/REMARKS
GT	GLEDITSIA TRIACANTHOS INERMIS 'STREET KEEPER'	HONEYLOCUST	4 IN. CALIPER
AL	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	8'-10' HGT
EF	EUONYMUS FORTUNEI 'COLORATUS'	WINTERCREEPER	NO. 3 CONTAINER
MG	MYRICA GALE	BAYBERRY	NO. 3 CONTAINER
HH	HEDERA HELIX	ENGLISH IVY	NO. 2 CONTAINER
CA	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	REED GRASS	NO. 2 CONTAINER
AC	ASARUM CANADENSE	EUOROPEAN WILD GINGER	NO. 2 CONTAINER
TE	TRILLIUM ERECTUM	WAKE ROBIN	NO. 2 CONTAINER
VA	VACCINIUM ANGUSTIFOLIUM	LOWBUSH BLUEBERRY	NO. 1 CONTAINER

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Mitchell Planning
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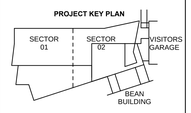
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
NA 108
STATE OF MAINE
12-10-18

KEY PLANS

PROJECT KEY PLAN



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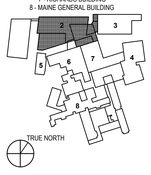

RESUBMIT TO CITY
DECEMBER 10, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	DLR

TITLE

LANDSCAPE PLAN, LOWER CONGRESS, CONGRESS STREET EXPANSION

SHEET NUMBER

C05-02

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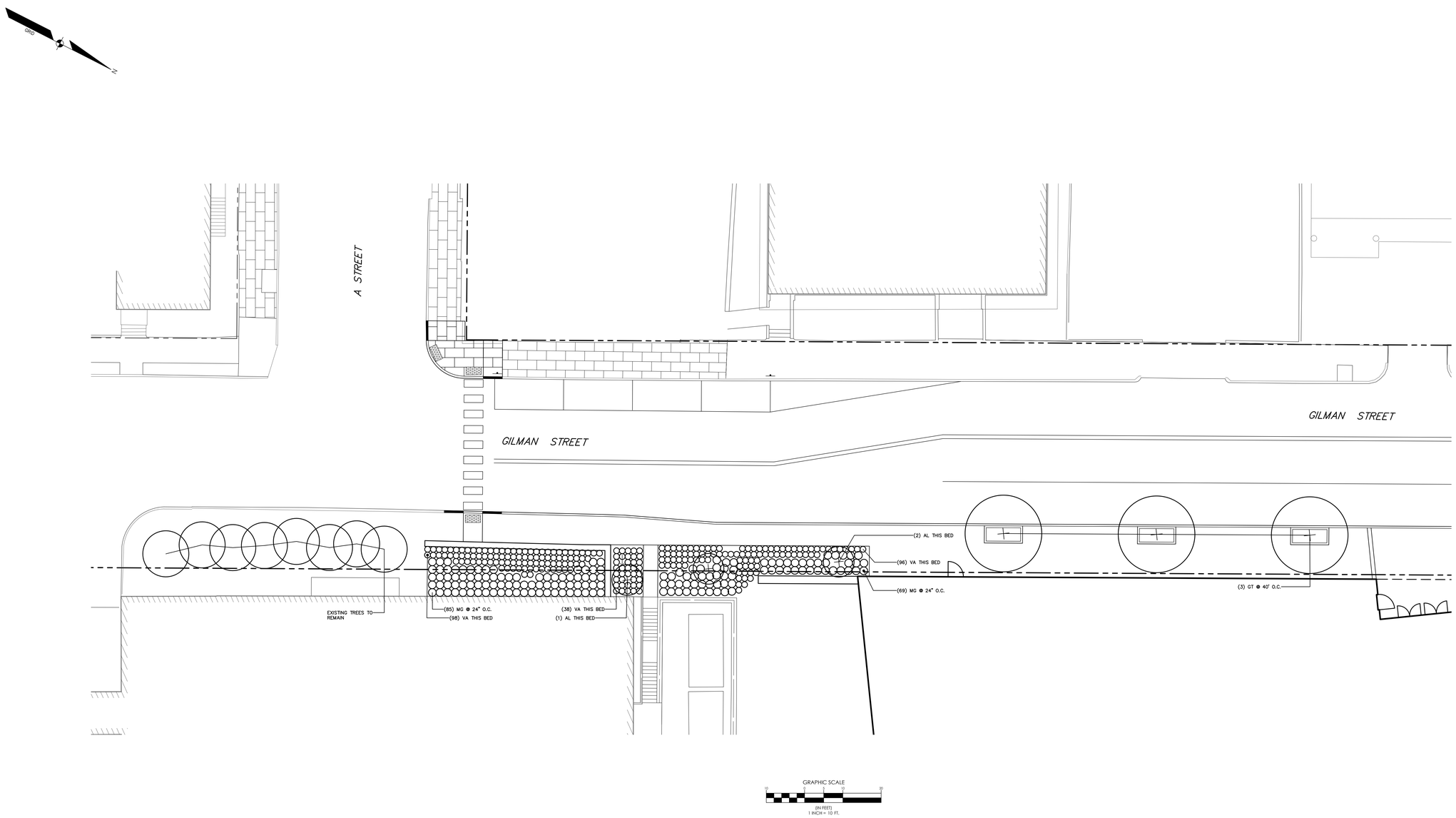
15466L3.dwg, TAB: (2)



PLANTING SCHEDULE

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VA	VACCINIUM ANGUSTIFOLIUM	LOWBUSH BLUEBERRY	NO. 1 CONTAINER

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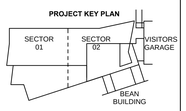
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
NA 108
STATE OF MAINE
12-10-18

KEY PLANS

PROJECT KEY PLAN



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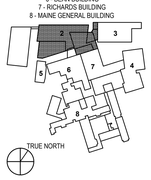

RESUBMIT TO CITY
DECEMBER 10, 2018

NO	ISSUE	DATE

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	DLR

TITLE

LANDSCAPE PLAN, GILMAN STREET, CONGRESS STREET EXPANSION

SHEET NUMBER

C50-03

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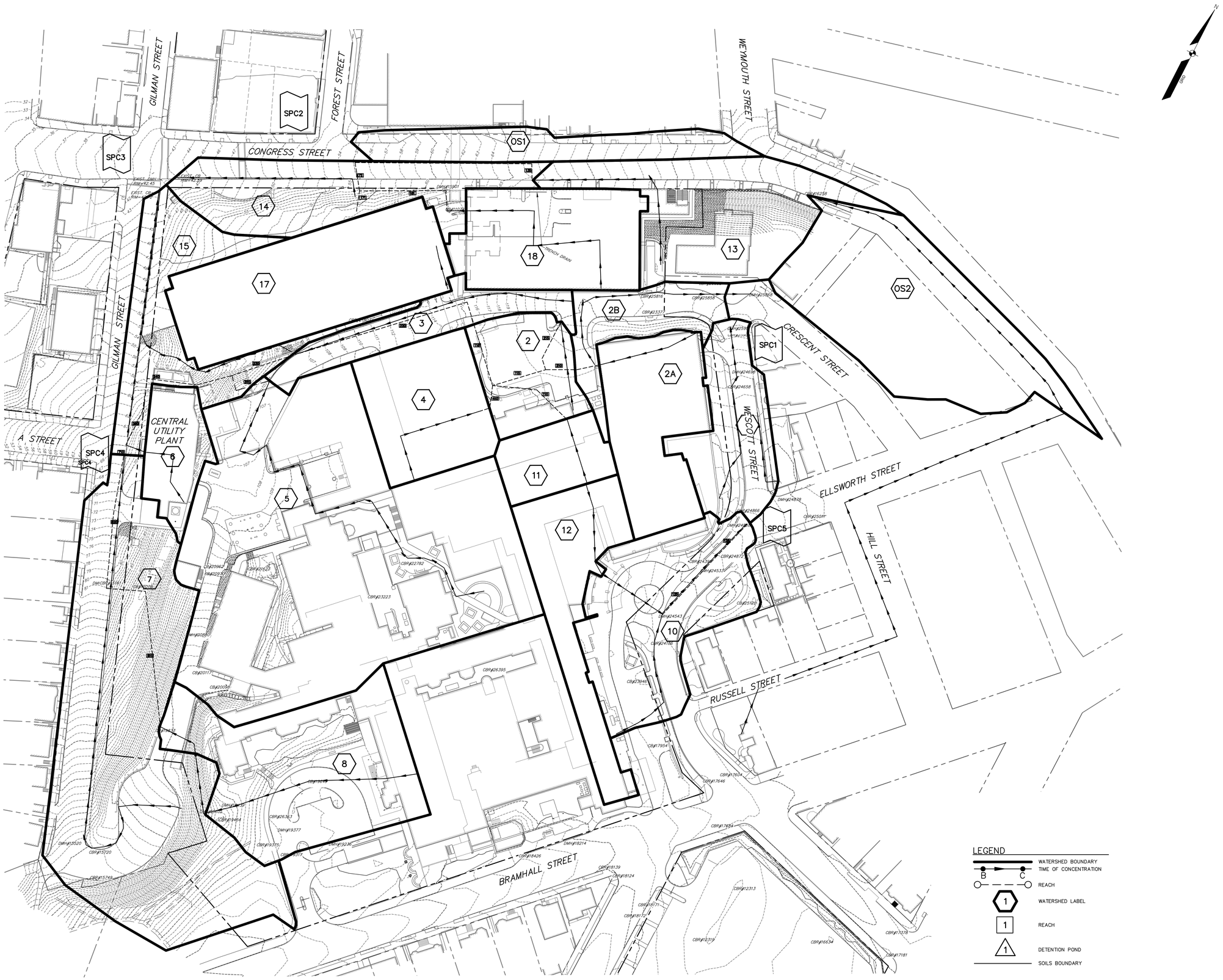
154661.3.dwg, TAB: (3)



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Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

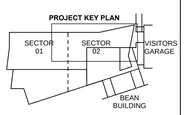
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

STATE OF MAINE
DANIEL L. RILEY
No. 14667
LICENSED
PROFESSIONAL ENGINEER
9/25/18

KEY PLANS

PROJECT KEY PLAN



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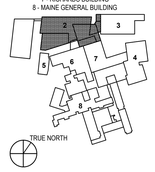

CITY SUBMISSION
SEPTEMBER 25, 2018

NO	ISSUE	DATE
1	CITY SUBMISSION	9/25/2018

Job Number	152189.000
Drawn	MAL
Checked	WTC
Approved	DLR

TITLE

PRE DEVELOPMENT CAMPUS WATERSHED PLAN, CONGRESS STREET EXPANSION

SHEET NUMBER

C60-01

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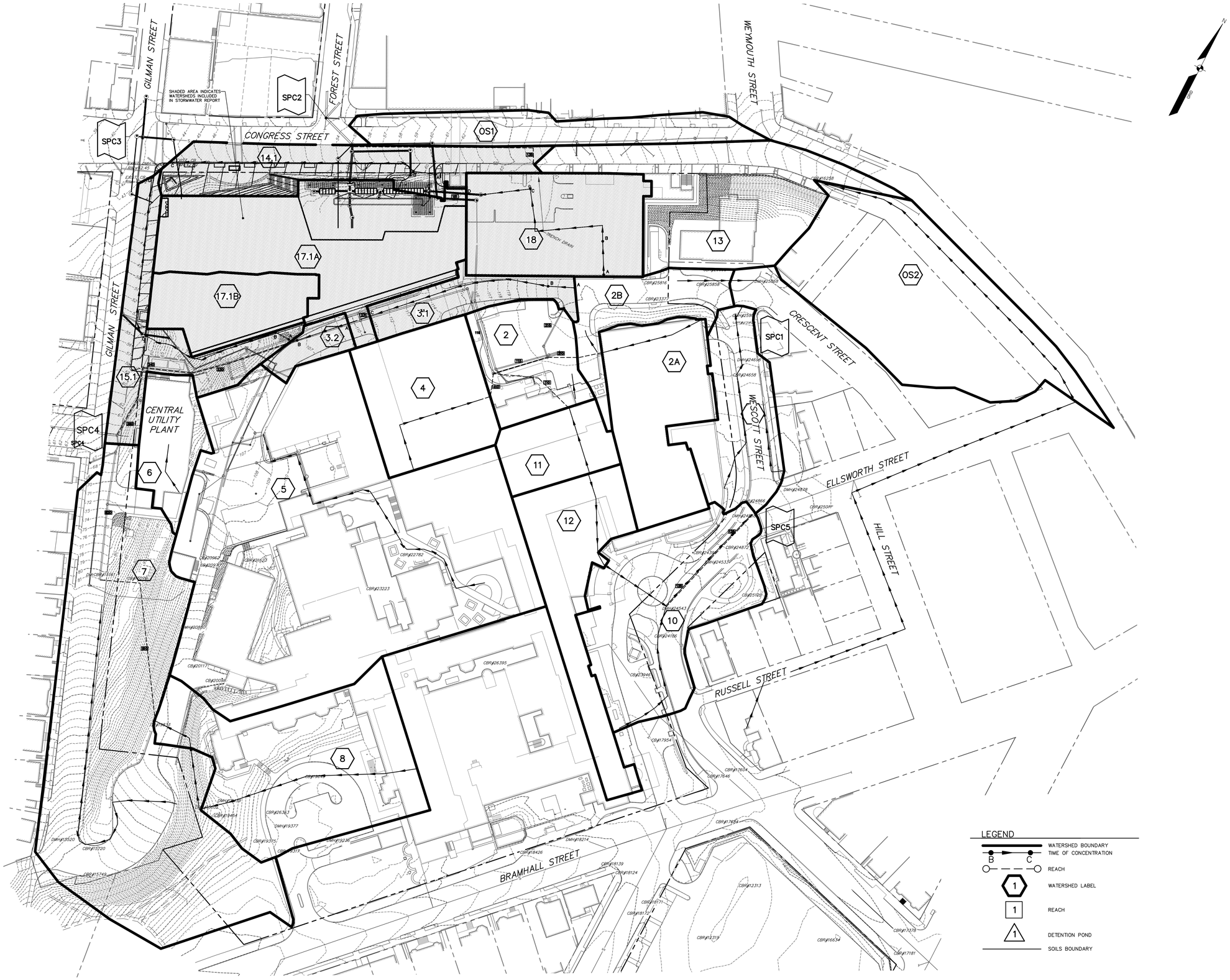
15466SWP2.dwg, TAB: OVERALL-PRE



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CLIENT

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MaineHealth

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MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

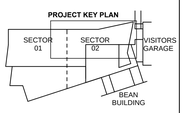
PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

STATE OF MAINE
DANIEL L. RILEY
No. 14607
LICENSED PROFESSIONAL ENGINEER
9/25/18

KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

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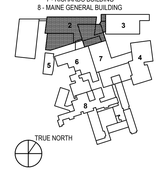

CITY SUBMISSION
SEPTEMBER 25, 2018

NO	ISSUE	DATE
1	CITY SUBMISSION	9/25/2018

Job Number	152189.000
Drawn	DJS
Checked	WTC
Approved	DLR

TITLE

POST DEVELOPMENT CAMPUS WATERSHED PLAN, CONGRESS STREET EXPANSION

SHEET NUMBER

C60-02

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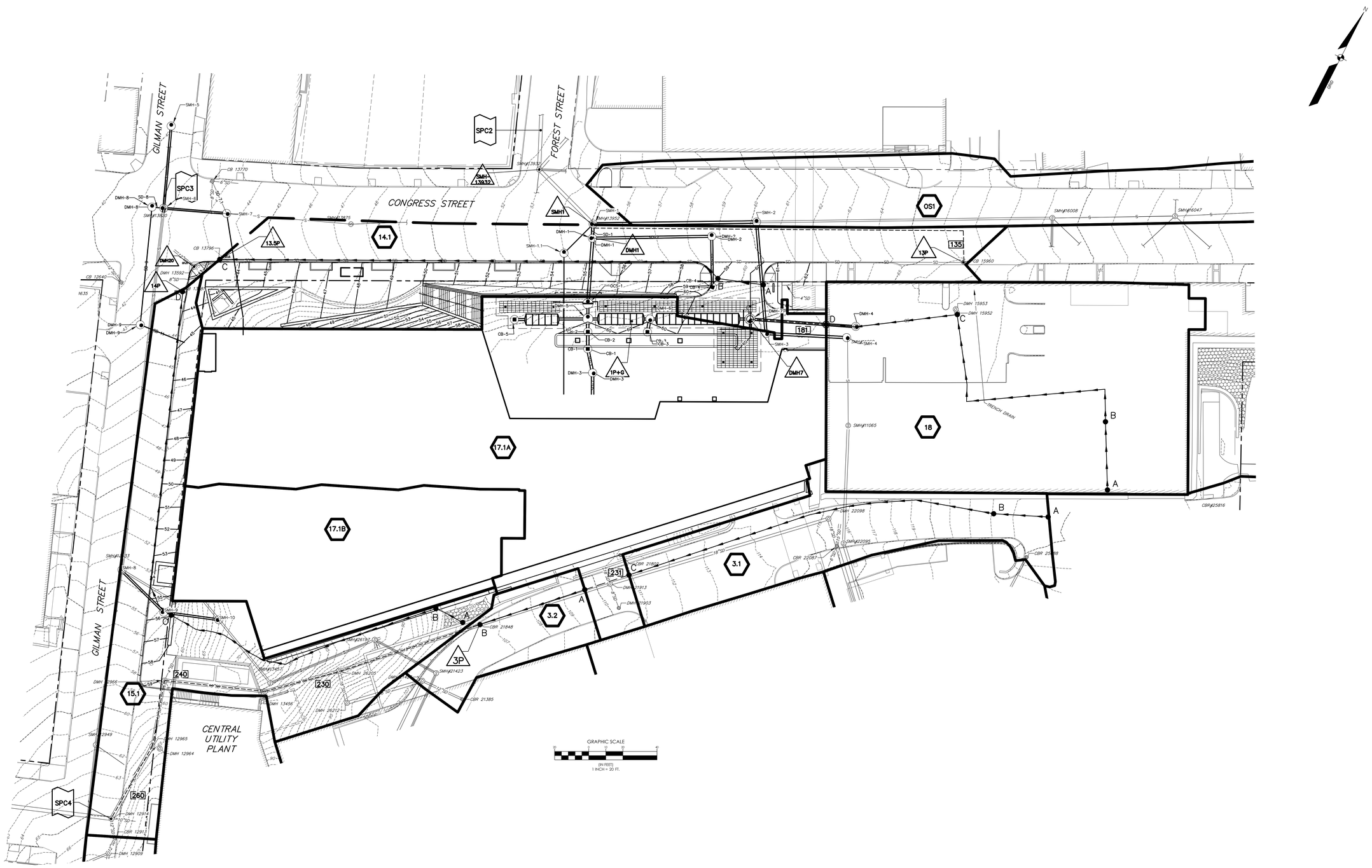

LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION
- REACH
- WATERSHED LABEL
- REACH
- DETENTION POND
- SOILS BOUNDARY

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PROJECT TITLE

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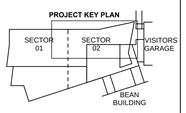
STATE OF MAINE
DANIEL L. RILEY
No. 14667
LICENSED PROFESSIONAL ENGINEER
9/25/18

KEY PLANS

PROJECT KEY PLAN



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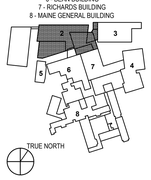

CITY SUBMISSION
SEPTEMBER 25, 2018

NO	ISSUE	DATE
1	CITY SUBMISSION	9/25/2018

Job Number	152189.000
Drawn	DJS
Checked	WTC
Approved	DLR

TITLE

POST DEVELOPMENT WATERSHED PLAN, CONGRESS STREET EXPANSION

SHEET NUMBER

C60-03

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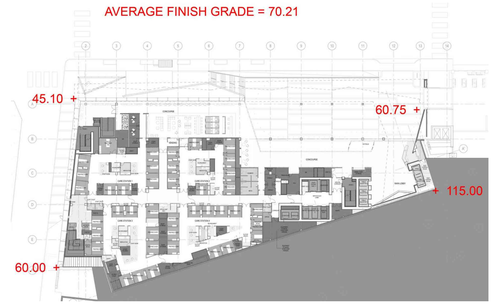
154665\WP2.dwg, TAB:POST



VISITOR'S GARAGE

CONGRESS STREET BUILDING

MAXIMUM BUILDING HEIGHT PER REGULATORY FRAMEWORK 270.21

200' -0"

CAMPUS LEVEL 2 164' - 6"

18' - 8"

LEVEL 7 145' - 10"

14' - 4"

LEVEL 6 131' - 6"

13' - 6"

34' - 3 1/2"

LEVEL 5 118' - 0"

13' - 6"

LEVEL 4 104' - 6"

13' - 6"

LEVEL 3 91' - 0"

16' - 0"

LEVEL 2 75' - 0"

4' - 9 1/2"

AVERAGE GRADE ELEVATION 70.21

9' - 2 1/2"

LEVEL 1 61' - 0"

15' - 6"

GILMAN EGRESS LEVEL 52' - 3"

GILMAN STREET EMPLOYEE ENTRANCE LEVEL 45' - 6"

ALUMINUM CURTAINWALL SYSTEM

METAL PANEL

MOB BRIDGE

Maine Medical Center MaineHealth

GRADE AT CORNER 60.75

ALUMINUM CURTAINWALL SYSTEM

LIMESTONE PANELING

EXISTING COMMUNICATION BOX ON CONC.PAD

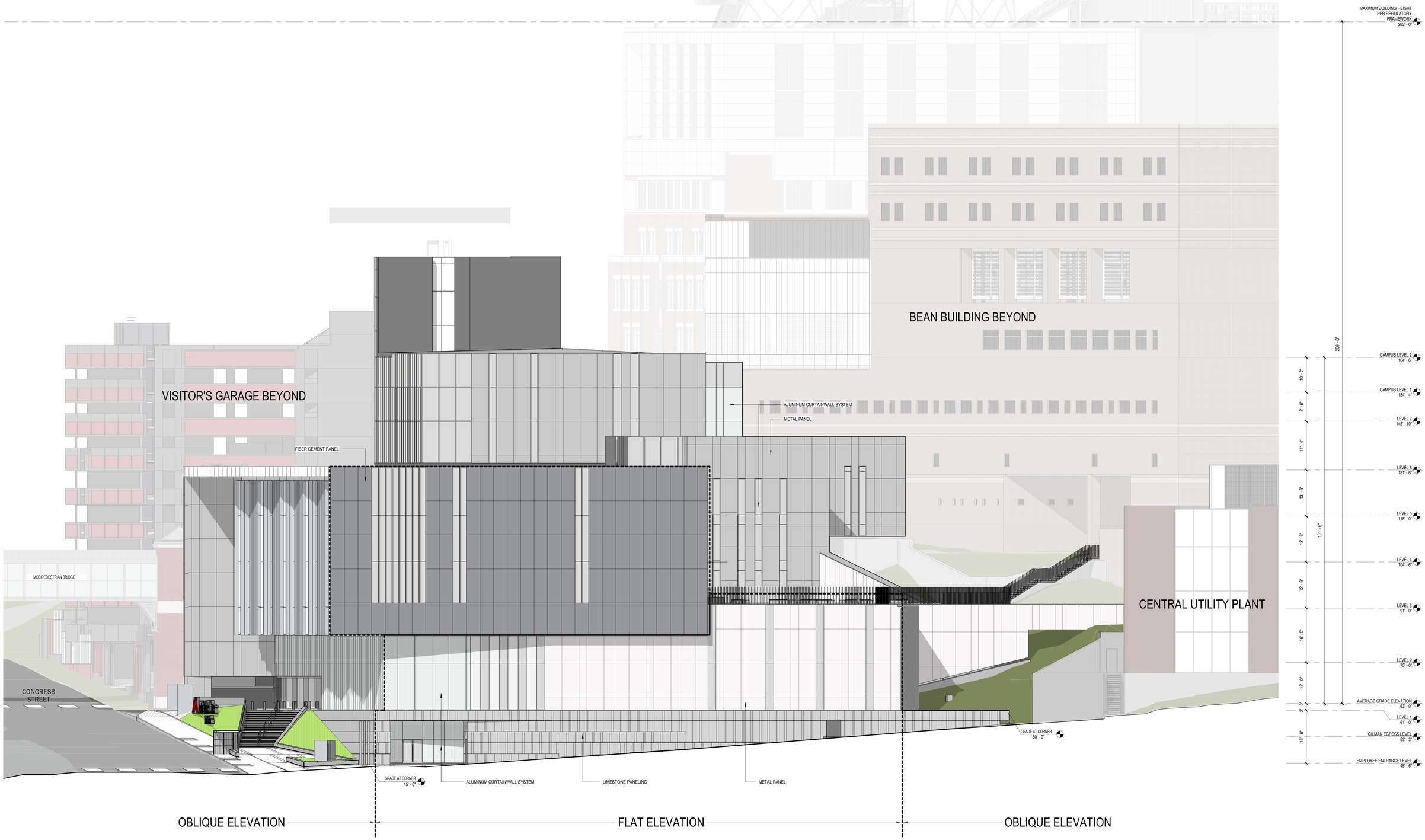
GRADE AT CORNER 45.10

Maine Medical Center MaineHealth

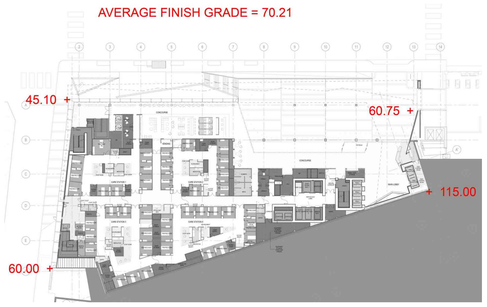
Congress Street Building

EXTERIOR ELEVATION - NORTH

PERKINS+WILL


MAXIMUM BUILDING HEIGHT PER REGULATORY FRAMEWORK 263' - 0"
BEAN BUILDING BEYOND
VISITOR'S GARAGE BEYOND
ALUMINUM CURTAINWALL SYSTEM
METAL PANEL
FIBER CEMENT PANEL
MOB PEDESTRIAN BRIDGE
CENTRAL UTILITY PLANT
CONGRESS STREET
GRADE AT CORNER 45' - 0"
ALUMINUM CURTAINWALL SYSTEM
LIMESTONE PANELING
METAL PANEL
GRADE AT CORNER 60' - 0"
OBLIQUE ELEVATION
FLAT ELEVATION
OBLIQUE ELEVATION
200' - 0"
10' - 2"
9' - 8"
14' - 4"
13' - 9"
13' - 9"
13' - 9"
13' - 9"
16' - 0"
12' - 0"
2' - 0"
9' - 1"
CAMPUS LEVEL 2 164' - 6"
CAMPUS LEVEL 1 154' - 4"
LEVEL 7 140' - 10"
LEVEL 6 131' - 6"
LEVEL 5 118' - 0"
LEVEL 4 104' - 6"
LEVEL 3 91' - 0"
LEVEL 2 75' - 0"
AVERAGE GRADE ELEVATION 63' - 0"
LEVEL 1 61' - 0"
GILMAN EGRESS LEVEL 53' - 3"
EMPLOYEE ENTRANCE LEVEL 45' - 6"

AVERAGE FINISH GRADE = 70.21



MAXIMUM BUILDING HEIGHT PER REGULATORY FRAMEWORK 70.21

OBLIQUE ELEVATION

ALUMINUM CURTAINWALL SYSTEM

LOUVERS

BEAN BRIDGE CAMPUS GROUND CONNECTOR

BEAN BRIDGE CAMPUS BASEMENT CONNECTOR

BEAN BRIDGE CONNECTOR

NEW CONC., TYP.

METAL PANEL

METAL PANEL

FLAT ELEVATION

GRADE AT CORNER 115.00

LOCATION OF PIPES FROM CENTRAL UTILITY PLANT (CUP) TO CONGRESS STREET BUILDING, PIPES COVERED WITH METAL PANELING

GRADE AT CORNER 60' - 0"

DASHED LINE INDICATES OUTLINE OF EXISTING RETAINING WALL

200' - 0"
10' - 2"
8' - 6"
14' - 4"
13' - 6"
94' - 3 1/2"
47' - 9 1/2"

CAMPUS LEVEL 2 164' - 6"
CAMPUS LEVEL 1 154' - 4"
LEVEL 7 145' - 10"
LEVEL 6 131' - 6"
LEVEL 5 118' - 0"
AVERAGE GRADE ELEVATION 70.21

Maine Medical Center
MaineHealth

Congress Street Building

EXTERIOR ELEVATION - SOUTH

PERKINS+WILL




Maine Medical Center


Saeng
Thai House
Eat In - Take Out
780 - 0900 780 - 0911
3Q

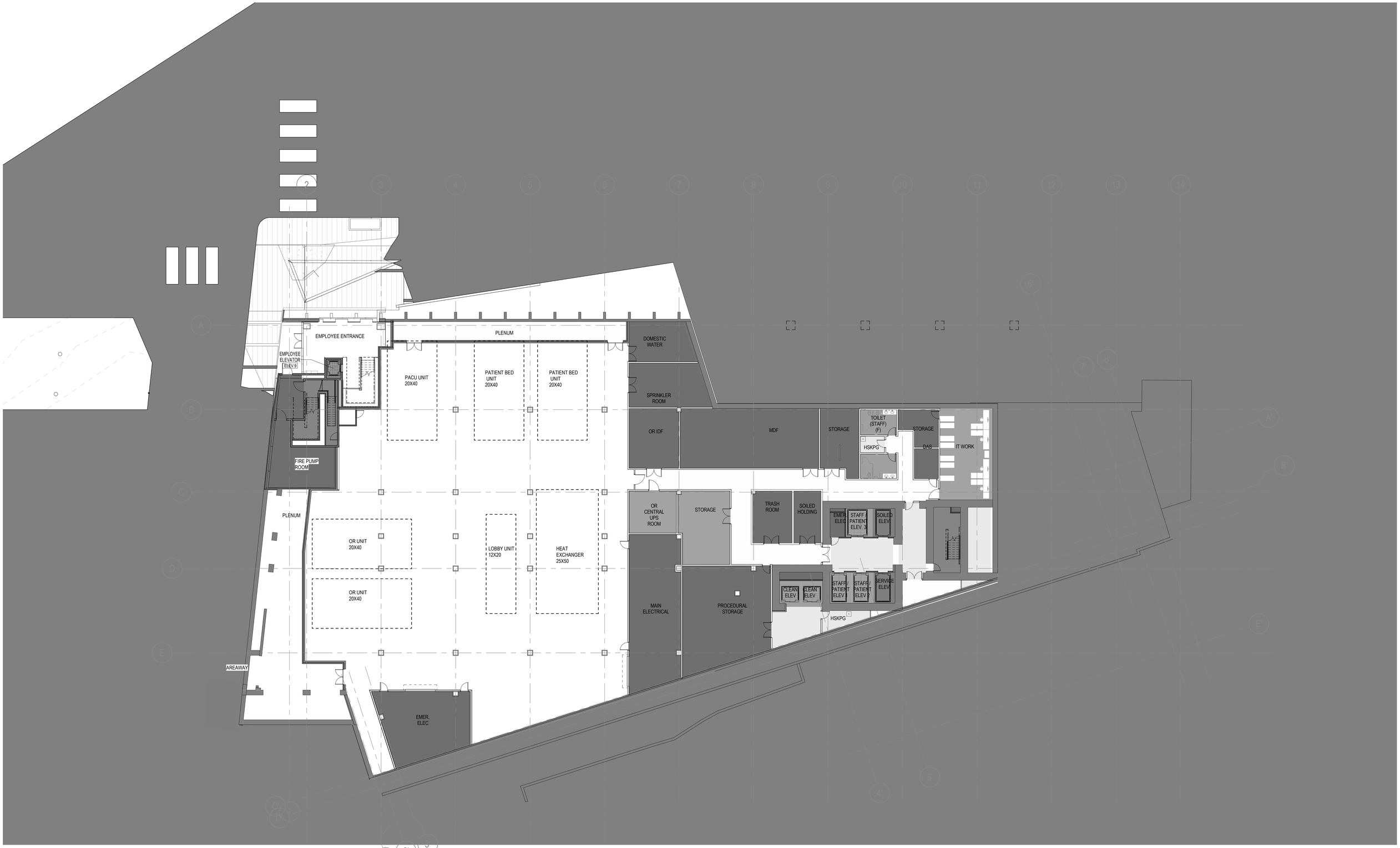












1/16" = 1'-0"

Maine Medical Center
MaineHealth

Congress Street Building
LEED DOCUMENTATION

LEVEL B PLAN

PERKINS+WILL

CONSTRUCTION DOCUMENTS

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1/16" = 1'-0"

Maine Medical Center
MaineHealth

Congress Street Building
LEED DOCUMENTATION

LEVEL 1 PLAN

PERKINS+WILL

CONSTRUCTION DOCUMENTS

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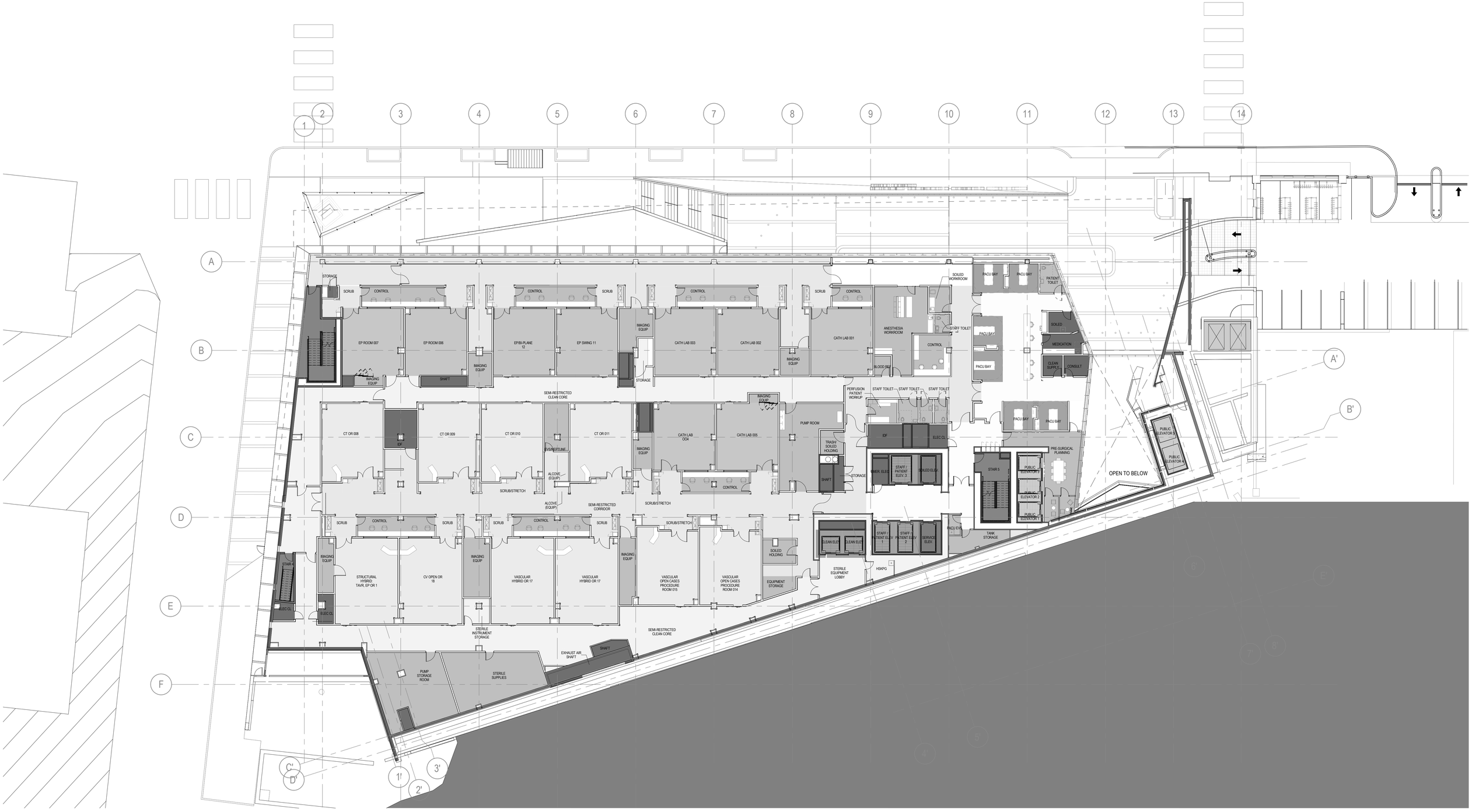

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Maine Medical Center
MaineHealth

Congress Street Building
LEED DOCUMENTATION

LEVEL 2 PLAN

PERKINS+WILL

CONSTRUCTION DOCUMENTS

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1/16" = 1'-0"

Maine Medical Center
MaineHealth

Congress Street Building
LEED DOCUMENTATION

LEVEL 3 PLAN

PERKINS+WILL

CONSTRUCTION DOCUMENTS

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1/16" = 1'-0"

Maine Medical Center
MaineHealth

Congress Street Building
LEED DOCUMENTATION

LEVEL 4 PLAN

PERKINS+WILL

CONSTRUCTION DOCUMENTS

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1/16" = 1'-0"

Maine Medical Center
MaineHealth

Congress Street Building
LEED DOCUMENTATION

LEVEL 5 PLAN (BRAMHALL SUB-BASEMENT LEVEL)

PERKINS+WILL

CONSTRUCTION DOCUMENTS

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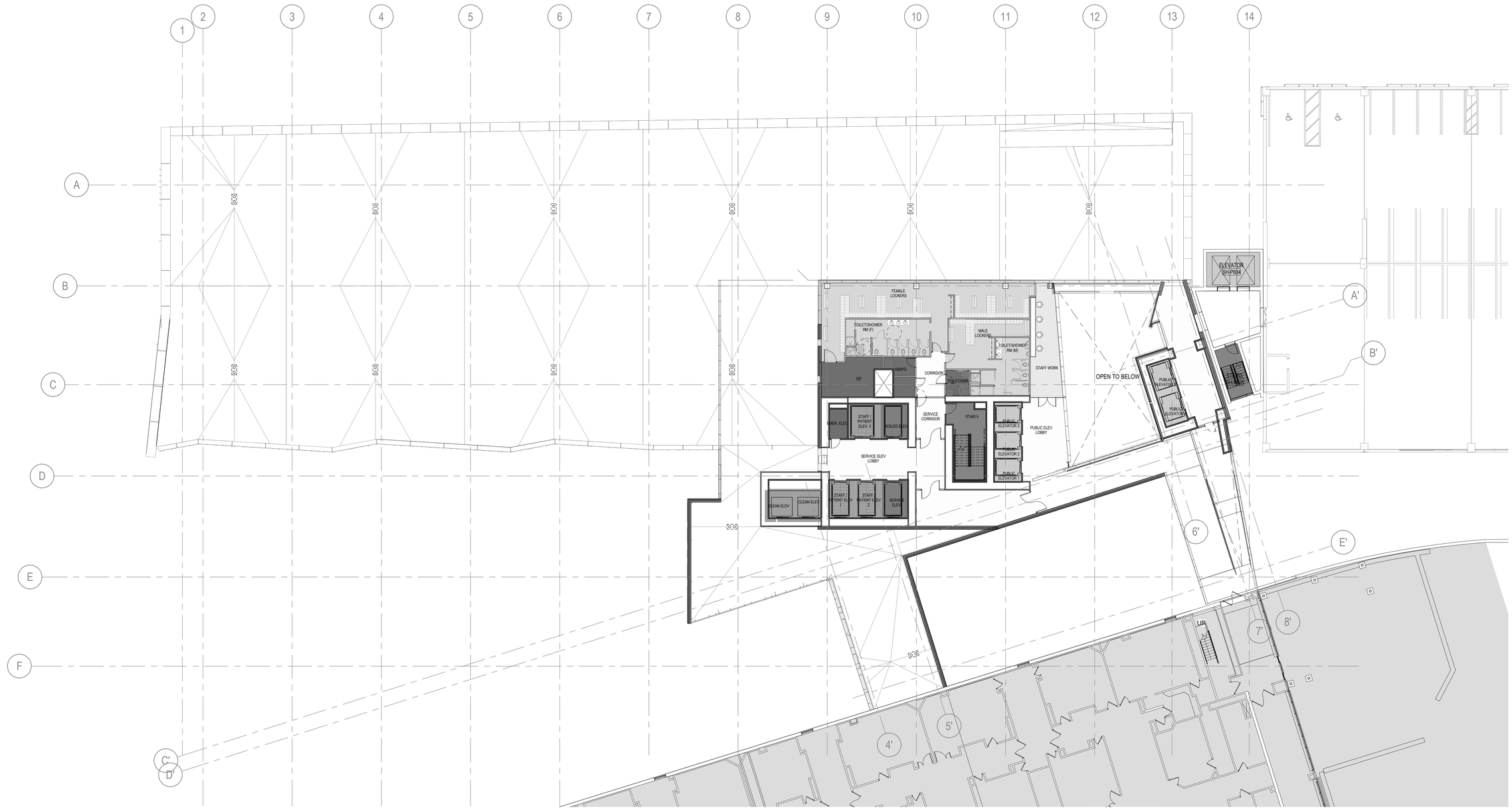

1/16" = 1'-0"

Maine Medical Center
MaineHealth

Congress Street Building
LEED DOCUMENTATION

LEVEL 6 PLAN (BRAMHALL BASEMENT LEVEL)

PERKINS+WILL

CONSTRUCTION DOCUMENTS

10/14/2018 1:49:32 PM


1
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11
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A
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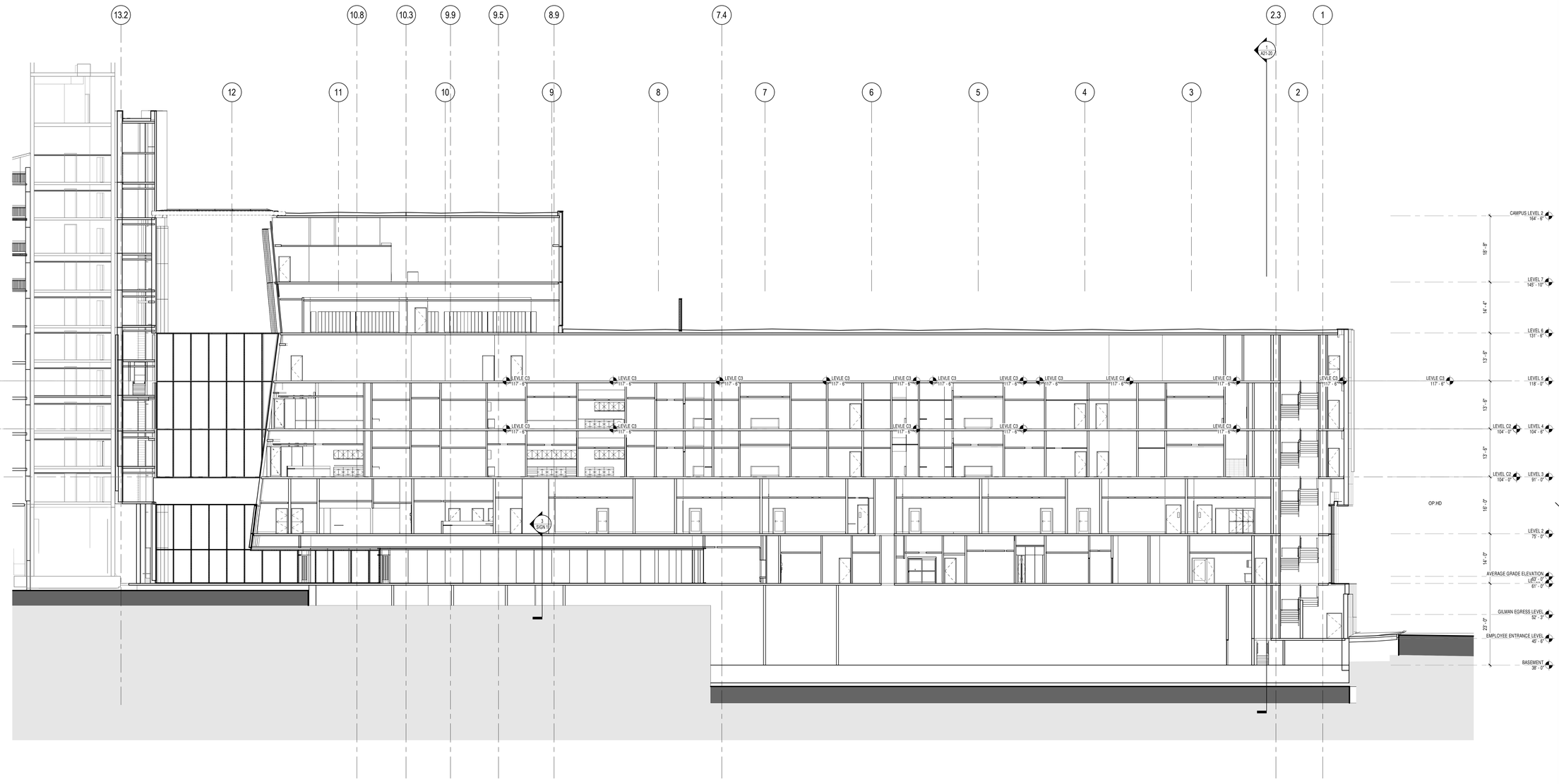
F
A'
B'
C'
D'
E'
7'
8'
56 seats
PUBLIC TOILET(F)
HSKPG
IDF
ELEC CL
MECH. ACESS
STAFF TOILET
PUBLIC TOILET (M)
EMER. ELEC
STAFF / PATIENT ELEV 3
OILED ELEV
STAIR 5
SERVICE CORRIDOR
PUBLIC ELEVATOR
PUBLIC ELEVATOR
PUBLIC ELEVATOR
SERVICE ELEV LOBBY
STAFF / PATIENT ELEV
STAFF / PATIENT ELEV
SERVICE ELEV
CORRIDOR
OPEN TO BELOW
CONNECTOR
ELEVATORS (SHAFTS)
EXIST VISITOR GARAGE ELEV LOBBY
PUBLIC ELEVATOR
PUBLIC ELEVATOR
STAIRS
UP
4'
5'

1/16" = 1'-0"



1 BUILDING SECTION EAST / WEST (LOOKING SOUTH)
3/32" = 1'-0"

PERKINS + WILL
225 Franklin Street, Suite 1100
Boston, MA 02110
t 617.478.0300
f 617.478.0321
www.perkinswill.com

CLIENT

Maine Medical Center
MaineHealth

LEED DOCUMENTATION

22 Bramhall Street
Portland ME 04102

CONSULTANTS

CIVIL / LANDSCAPE ARCHITECT
Sebago Technics
75 John Roberts Road, Suite 1A, South Portland ME 04106

STRUCTURAL ENG/ BUILDING ENVELOPE CONSULTANT
Simpson Gumpertz & Heger Inc.
41 Seyon Street, Building 1, Suite 500, Waltham MA 02453

MEP/FP ENGINEER/ CODE/ LOW VOLTAGE
AKF Group LLC
99 Bedford Street, 2nd Floor, Boston MA 02111

CONSTRUCTION MANAGER
Turner Construction
2 Seaport Lane, Suite 200, Boston MA 02210

ELEVATOR CONSULTANT
VDA (Van Deusen & Associates)
101 Summer Street, 4th Floor, Boston MA 02110

COST ESTIMATOR
D. G. Jones International
3 Baldwin Green Common, Suite 202, Woburn MA 01801

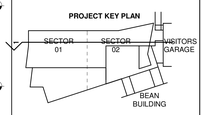
MEDICAL EQUIPMENT PLANNING
Mitchell Planning
630 Dundee Road, Suite 340, Northbrook IL 60062

PROJECT TITLE

Congress Street Building
22 Bramhall Street
Portland ME 04102

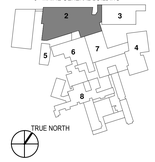
KEY PLANS

PROJECT KEY PLAN



OVERALL KEY PLAN

1 - NOT USED
2 - CONGRESS STREET
3 - VISITOR GARAGE
4 - EAST TOWER
5 - CENTRAL UTILITY PLANT
6 - BEAN BUILDING
7 - RICHARDS BUILDING
8 - MAINE GENERAL BUILDING



TRUE NORTH

CONSTRUCTION DOCUMENTS
PROGRESS SET

NO	ISSUE	DATE
1	PROGRESS SET	09/07/2018

Job Number	152189.000
Drawn	TEAM
Checked	DS/RS
Approved	JK

TITLE

E-W BUILDING SECTIONS

SHEET NUMBER

A21-10

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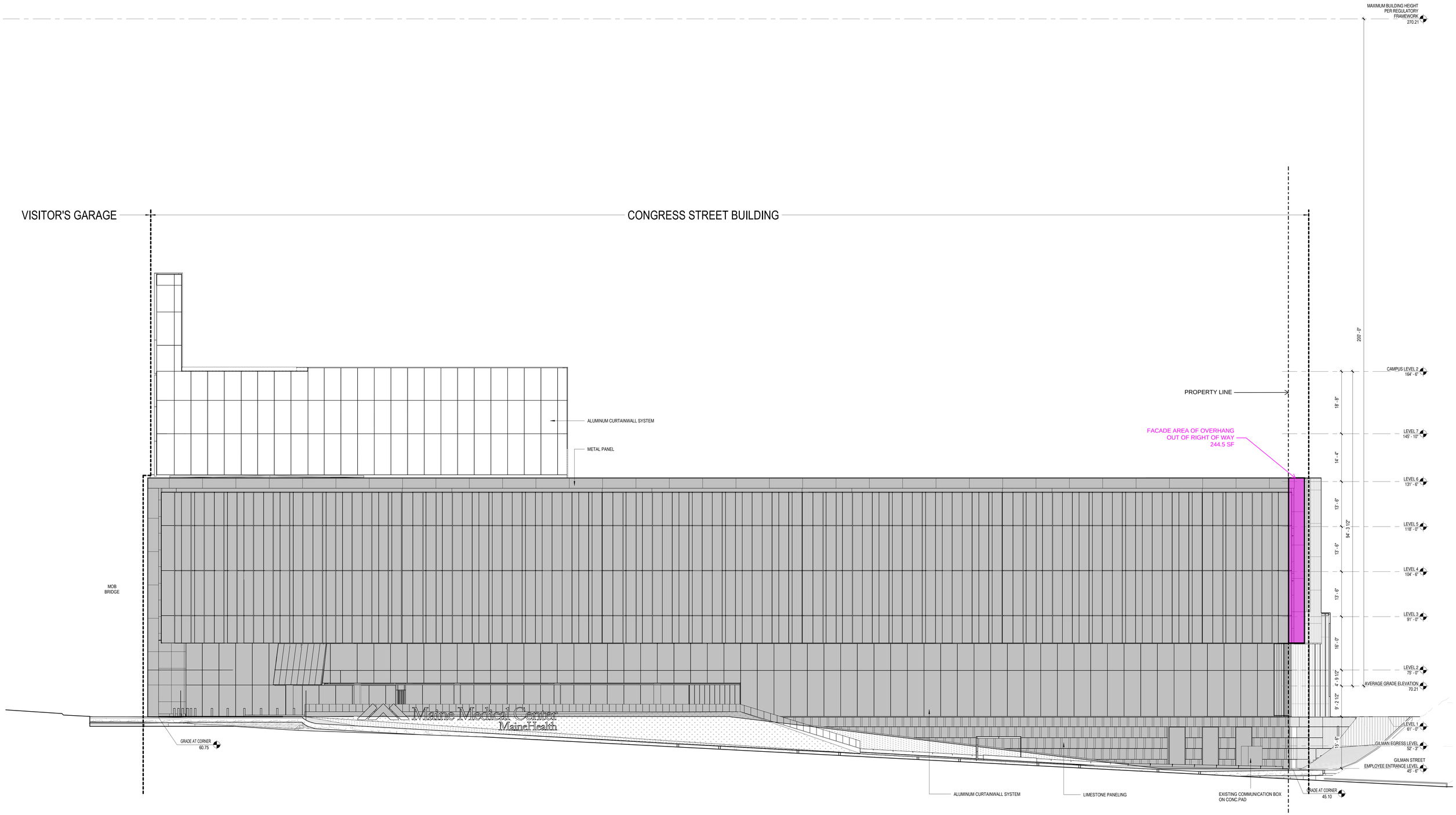
152189-MMC-Congress IS-V2017_detached.rvt


PROPERTY LINE
BUILT STRUCTURE
95.97SF
USABLE FLOOR
50.74SF
OVERHANG TOTAL
146.71SF


MAXIMUM BUILDING HEIGHT
PER REGULATORY
FRAMEWORK
270.21
VISITOR'S GARAGE
CONGRESS STREET BUILDING
ALUMINUM CURTAINWALL SYSTEM
METAL PANEL
PROPERTY LINE
FACADE AREA OF OVERHANG
OUT OF RIGHT OF WAY
244.5 SF
200' - 0"
CAMPUS LEVEL 2
164' - 6"
LEVEL 7
145' - 10"
LEVEL 6
131' - 6"
LEVEL 5
118' - 0"
LEVEL 4
104' - 6"
LEVEL 3
91' - 0"
LEVEL 2
79' - 0"
AVERAGE GRADE ELEVATION
70.21
LEVEL 1
61' - 0"
GILMAN EGRESS LEVEL
52' - 3"
GILMAN STREET
EMPLOYEE ENTRANCE LEVEL
45' - 6"
18' - 8"
14' - 4"
13' - 6"
13' - 6"
13' - 6"
15' - 6"
94' - 3 1/2"
25' 5 1/2"
9' - 2 1/2"
15' - 5"
MOB
BRIDGE
GRADE AT CORNER
60.75
GRADE AT CORNER
45.10
ALUMINUM CURTAINWALL SYSTEM
LIMESTONE PANELING
EXISTING COMMUNICATION BOX
ON CONC.PAD
Maine Medical Center
MaineHealth

Memorandum
Planning and Urban Development Department
Planning Division

To: Sean Dundon, Chair and Members of the Portland Planning Board

From: James Dealaman, Administrative Officer, Stuart O'Brien, Planning Director, and Jeff Levine, Planning and Urban Development Director

Date: December 14, 2018

Re: Proposed Division 30 Text Amendments for Hotel Inclusionary Zoning, City of Portland, Applicant

Meeting Date: December 17, 2018

I. INTRODUCTION

Stemming from policy ideas gleaned in the 2016 Housing Committee public feedback process, as well as targeting the 2017 committee priority to "implement policies to capitalize the Housing Trust Fund," the 2018 Housing Committee underwent three meetings of review and is providing the Planning Board guidance in support of the following proposed ordinance, "Hotel Inclusionary Zoning (IZ)," which incorporates a methodology similar to the inclusionary zoning ordinance 14-387, and would become a requirement on any hotel development of 10 units or more. The amendment would first provide a first option for all hotel uses (hotel/inn/motel) to provide low-income affordable housing units for rent on-site. Those units would then be differentiated from the rest of the development through deed restrictions and other requirements to ensure that they would be used for permanent affordable housing. If the hotel developer does not want to provide these units on-site, then the option would exist for a fee-in-lieu paid to the Housing Trust Fund to fund affordable housing.

The policy proposal is offered as a tool to help achieve the City Council's goal to "increase access to rental and ownership housing that is safe and affordable for working and low-income families," as analysis has shown hotel developments with contributing to affordable housing demand due to a percentage of newly employed households that cannot afford to live in Portland.

II. BACKGROUND TO ENSURING WORKFORCE HOUSING IN PORTLAND

In 2015, the City Council introduced Inclusionary Zoning *(City of Portland Land Use Code 14-487)* as an amendment to the ordinance which applied to any residential development project of ten or more units. Any residential development with ten or more units is either required to make available a minimum of 10% of their units as workforce housing eligible units for a given duration with the option of building units off-site (within the same census block), or also have the option of paying a fee-in-lieu towards the City's Housing Trust Fund, which is uniquely able to fund workforce housing driven projects, whereas federally funded HUD projects are limited to funding creation of low-income housing. Since its launch, residential Inclusionary Zoning fee-in-lieu contributed $1,185,648 into the Housing Trust fund and has so far subsidized projects which have created a total of 38 units available to eligible workforce households. Portland considers a workforce housing unit to mean rented to households earning 100% AMI or less, or a dwelling unit for sale to households earning 120% or less of AMI. (City

of Portland Land Use Code 14-485). Attached is an excerpt taken from the City's Interim Housing Report which indicates the current HUD AMI levels (Attachment 3).

III. PROPOSAL SUMMARY

In recent years, the city has experienced a steady rise in hotel/inn/motel development with an increase of 21 percent since 2012. This policy is guided by the Comprehensive Plan, and builds on existing programs such Inclusionary Zoning and Housing Trust Fund to implement best practices in workforce and affordable housing development. In addition, this policy fulfills the Comp Plan goal to "pursue policies to enable people who work in Portland to have the option to live in Portland" *(Portland's Plan 2030, 50)*. Local and national data strongly indicates that job creation in the hospitality industry will involve a considerable amount of working households at average wage rates below what is required to afford housing in Portland. For those workers unable to afford residence in Portland, nearer to their place of employment, means they would find themselves in the position of commuting longer distances and incur additional costs resulting from travel, parking, etc. Conversely, there may also be households that choose to commit more of their income to a point considered "unaffordable," (e.g. Portland considers affordable to mean 30% or less of a households' income is committed to rent or other housing expenses (*City Land Use Code 14-485)*), which in policy terms is considered inequitable, as those earning less income are in the position of spending disproportionally more than those with greater means, in order to be able to live in Portland. Finally, influx of workers into the rapidly expanding hospitality industry creates a dynamic of adding additional pressure to the housing market for all households and accordingly, increases pressure on housing availability across sectors. Although this is true to a degree among all growing industries, the impact is especially acute related to growth in the hospitality industry given the nature of employment categories, hours of operations and services provided.

As a result of the specifics of the industry's profile and anticipating an increase in hotel/inn/motel development in the coming years (30 percent between 2019-2021) City Staff are proposing Hotel Inclusionary Zoning as an ordinance amendment to the City's Land-Use Code, Chapter 14, Division 30 (Attachment 1). The requirement would apply to hotel projects with 10 or more units within any 5-year period, and aims to encourage creation of affordable housing offered to eligible households based on one or both of the following:

- **"Housing Creation"** requires a hotel project to provide one unit of low-income housing for rent onsite for every 28 hotel rooms, with any hotel project that provides 10-27 rooms or a room total in between increments of 28 rooms to be rounded up to the nearest increment of 28 rooms and subject to that corresponding unit requirement. Portland considers a low-income housing unit to mean rented to households earning 80% AMI or less (City of Portland Land Use Code 14-485).

- **"Fee in Lieu Alternative"** is still subject to the unit requirements outlined under Housing Linkage provided above, but instead of providing units for every 28 rooms, a hotel project can pay a linkage fee of $3,806 per room to meet the requirement, which is deposited into the City's Housing Trust Fund *(City of Portland Land Use Code 14-489)*. The linkage fee will be adjusted through periodic updates to the nexus study.

Under the proposed Hotel Inclusionary Zoning proposal, the number of hotel rooms per required low-income unit is determined by two variables:

A) The proposal uses the same fee-in-lieu per unit as is used in the calculation in Land Use Code Sec 14-483 to then determine the number of hotel rooms equivalent to one unit. The fee-in-lieu contribution amount for a dwelling unit is updated annually. Presently, the fee-in-lieu per unit is **$104,699**.

B) The second variable is per key (hotel unit/room) is based on a nexus study (Attachment 2) assigned linkage fee amount determined by U.S. Census American Community Survey data to arrive at an amount targeting the affordability gap; with current data the amount is **$3,806 per unit**.

A **÷ B = C**

Fee-in-lieu per unit ÷ Linkage fee per hotel room = Number of hotel rooms per unit

C) Currently, the number of hotel rooms that equal the fee-in-lieu for one unit is roughly 27.5, or rounded up to 28 rooms per unit.

The Nexus Study is an important step in gauging whether or not there is a "nexus" or connection between a hotel development project and an affordability gap that exists for its workers in an area. Further, the study provides a proportional measure for a using a linkage fee to mitigate an affordability gap of any scale of hotel development. Earlier this year, the City commissioned a Job-Housing Nexus Study for analysis. Based on those findings documented in the Greater Portland Council of Government study (*Proposed Hotel Linkage Fee: Supportable Range*), which final version took into account feedback and updated data from the Maine Innkeepers Association, a range of potential fees based on a per key basis was provided which would allow the city to more broadly assess and address the affordability gap. Having a per key calculation provides the city the ability to measure by unit the varying scales of hotel development with their commensurate affordability gaps they are estimated with contributing.

Staff finds that of the three options offered by the nexus study the $3,806 per key calculation was most appropriate, as it incorporates the minimum wage requirement in effect, but also retains the diversity of employment types captured in the American Community Survey data. For developers who would prefer not to provide units on-site, the fee-in-lieu alternative allows for a predictable way to developers to anticipate the costs.

It is also relevant to note, that in addition to the proposed Hotel IZ requirements that any existing residential units that decided to convert into hotel use would also be subject to the Housing Replacement requirements of the ordinance *(City Land Use Code 14-483)* in addition to the current proposed Hotel Inclusionary Zoning requirements. The Hotel IZ could also be considered to provide an added layer of cost to deter projects from removing residential units from the housing stock.

IV. RETROSPECTIVE ANALYSIS

At the last Planning Board workshop September 25th the board had asked if data was available to quantify the amount of funds that would have been generated to the Housing Trust Fund over a period of five years under the current proposal. Staff have been able to determine that based on the current proposed fee-in-lieu ($3,806), between fiscal years 2014-2018 the Housing Trust Fund would have seen approximately $1,883,970 (495 new hotel units), or an average of $376,794/yr deposited into the HTF.

Additionally, staff took the opportunity to factor in all current projects in the pipeline (either under review, approved, or under construction) and show what revenue could have generated (table provided on right). However, based on the ordinance draft language applying to projects having not received approval, the actual forecast of revenue (assuming projects are approved, totaling 261 units) that could still be collected by the Housing Trust Fund to be $993,366, or by FY2021, or 10 low-income units.

Hotel, Inn, Motel Land Uses Issued CO (FY2014-18), and Pending Development (FY2019-21)

Fiscal Year	Total Keys Issued CO	Approx. Fee-in-lieu HTF Contribution (Based on Current Calculation of $3,806)
2014	217	$825,902
2015	241	$917,246
2016	22	$83,732
2017	0	$0
2018	15	$57,090
Total	**495**	**$1,883,970**
5-Year Average (FY2014-18)	**99**	**$376,794.00**
2019	180	$685,080
2020	253	$962,918
2021	261	$993,366
Total (FY19-21)	**694**	**$2,641,364**
Averaged Per Year (FY2019-21)	**231**	**$880,454.67**
Weighted Average (FY2014-21)	**149**	**$565,666.75**

Source: City of Portland Assessing, Planning, and Permitting Data

V. Staff Analysis

Based on the conclusions of the nexus study which confirm and quantify an affordability gap of hospitality worker households resulting from a hotel project, as well an upward trend in upcoming hotel development, Planning Staff find the attached proposal will help to address the affordability gap, by incentivizing affordable housing. If implemented, Hotel Inclusionary Zoning will be a useful tool in helping to create housing units, or alternatively, through increasing funding for the Housing Trust.

Based on additional analysis conducted by Collier's International which was based on the proposed $3,806 linkage fee, staff have found marginal impacts on the difference in Internal Rate of Return (IRR) and in Return on Investment (ROI), for a Downtown Hotel, which is estimated at being a (.58%) and (.34%) decrease, respectively. For a Suburban Airport Hotel the difference in IRR and ROI was only slightly higher, at (.66%) and (.43%), respectively. Collier's analysis also provides that Hotel Inclusionary Zoning fee would represent less than 2.8 percent on total development costs for any hotel project.

Staff have concluded that given the current pace of hotel development seen across past years as well as the anticipated growth in the hospitality industry in Portland, hotel development is shown to be able to accommodate a housing linkage policy to address the affordability gap of new workers households they produce.

VI. Comprehensive Plan



The City of Portland's Comprehensive plan, *Portland's Plan 2030*, provides important short term and longer-term goals and strategies for informing policy makers as they consider policies and priorities. The proposed text amendment allowing for Hotel Inclusionary Zoning is relevant to a variety of important sections throughout the plan. Several key examples include:

Goals:

- Invest in, attract, and retain human capital to support a growing economy.
- Increase, preserve, and modify the overall supply of housing city-wide to meet the needs, preferences and financial capabilities of all Portland residents.
- Pursue policies to enable people who work in Portland to have the option to live in Portland.

Housing Strategies:

- **Build on Existing Programs**
  a) Reinforce existing housing tools, policies, and programs while continuing to explore emerging best practices.
  b) Continue to implement best practices in workforce and affordable housing development such as the Housing Trust Fund, inclusionary zoning, and other tools.
- **Adopt Measurable Objectives**
  a) Consider national best practices in developing metrics.
- **Explore New Tools**
  b) Explore tools that support innovative frameworks for housing creation, stability, and affordability, such as but not limited to community land trusts and a Transfer of Development Rights program.

VII. Next Steps

1. City Council Public Hearing

VIII. Attachments:

1. Draft Hotel Inclusionary Zoning Ordinance, 12/5/18
2. Nexus Study Report provided by GPCOG entitled, "Proposed Hotel Linkage Fee: Supportable Range," 8/29/18
3. HUD AMI Levels, Excerpt from City of Portland "Interim Housing Report," 11/2018
4. Portland Impact Fee Analysis Summary provided by Colliers International, 9/24/18
5. Staff Memo to Housing Committee, Jeff Levine, Director, Planning and Urban Development Department, 8/29/18
6. Staff Memo to Housing Committee, Jeff Levine, Director, Planning and Urban Development, 6/21/18
7. Chapter 14 Land Use Code Definitions of Hotel, Motel, and Inn

Sec.14-484. Purpose.
It is in the public interest to promote an adequate supply of affordable housing for the city's residents. The purpose of this division therefore is to offer incentives to developers to include units of affordable housing within development projects or based on demonstrated need caused by creation of new lower-income jobs, thereby mitigating the impact of market rate housing construction on the limited supply of available land for suitable housing, and helping to meet the housing needs of all economic groups within the city. The city believes that this division will assist in meeting the city's comprehensive goals for affordable housing, in the prevention of overcrowding and deterioration of the limited supply of affordable housing, and by doing so promote the health, safety and welfare of its citizens.

Sec. 14-485. Definitions.

…

Hotel Project is any hotel, inn or motel, as defined in this ordinance, consisting of 10 or more rooms for rent. Any such development that expands by 10 or more rooms within any 5 year period will also be considered a Hotel Project.

14-489 Inclusionary Zoning for Hotel Projects

(a) Purpose: This section is based on City analysis, most specifically documented in the Greater Portland Council of Government study "Proposed Hotel Linkage Fee: Supportable Range" dated 8/29/18, that finds that new hospitality developments create a need for new affordable housing. This need is the result of the fact that these uses create a number of jobs that do not pay sufficiently to afford housing provided in the market.

(b) Applicability: This section applies to all Hotel Projects as defined in 14-485 that have not submitted complete applications as of the effective date of this section.

(c) Housing Linkage: All Hotel Projects shall provide one unit of Low Income Housing for Rent in the City of Portland for every 28 rooms in the Hotel Project. This amount shall be rounded up to the nearest increment of 28 rooms. These units shall be deed restricted for the longest period permitted by law; shall not be used for Short Term Rentals of less than 30 days; and must be provided with distinct entrances from the street to delineate them from the hotel itself.

DRAFT

(d) Fee-in-Lieu Alternative: As an alternative to providing units as per (c) above, a Hotel Project may pay a fee-in-lieu of $3,806 per room. This amount shall be paid into the City's Housing Trust and used for the purposes set forth in the ordinance and regulations applicable to that trust:

(e) **Annual Adjustments:** The amounts in (d) above shall be adjusted annually in the same way as the fee under Division 29 for Housing Replacement.

(f) **Regulations:** The Planning Board may promulgate implementing regulations based on this ordinance.

Sec. 14-490. Housing trust fund.

DRAFT

To: **Jeff Levine, Planning & Urban Development Director**
From: **Stephanie Carver, GPCOG Planning Director**
Date: **8/29/18**
RE: **Proposed Hotel Linkage Fee: Supportable Range**

This memo has been expanded and updated based on additional data provided by the Maine Innkeepers Association.

Introduction

The City of Portland's Department of Planning & Urban Development is examining the feasibility of a proposal for assessing hotel linkage fees that would recover the cost of producing housing that is affordable for hotel employees. The purpose of this memo is to provide information to the City regarding the use of linkage fees for this purpose and outline a potential methodology for the calculation of a fee.

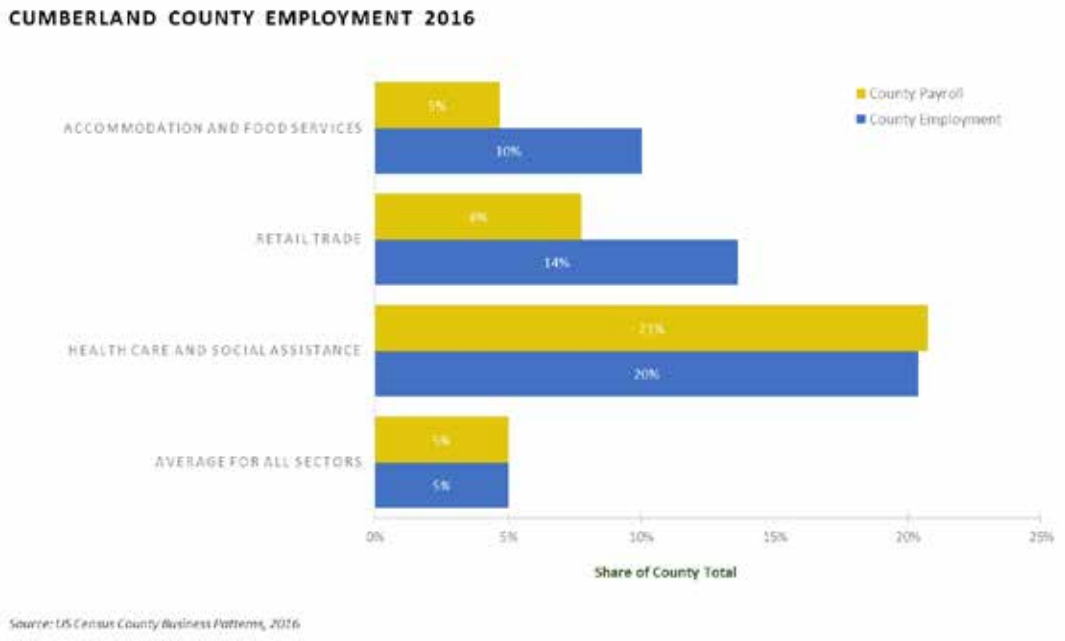
We have used the best available data to demonstrate how this methodology could be used to estimate a potential hotel linkage fee, but this does not constitute a recommendation from GPCOG as to the amount the City of Portland should charge for the hotel linkage fee nor is it a recommendation for the City of Portland to enact a hotel linkage fee ordinance.

Background

Linkage fees are fees that cities may choose to implement to help mitigate the impact of new commercial development on the demand and availability of affordable housing. Prior to implementing a fee policy, communities often conduct a study to identify the connection, or "nexus" between new commercial development and the need for additional affordable housing. It is assumed that new commercial development contributes additional workers to a city's workforce and adds new worker households. In many industries, a percentage of these households do not make enough to live and work in the same city. Looking outside the city to find affordable housing often results in longer commute times and higher transportation costs. If implemented, a linkage fee is typically charged to a developer as a condition of approval and it is assessed based on total square footage or number of units in the development.

The City's Comprehensive Plan identifies the increasing demand for affordable housing as an emerging issue and sets a goal of pursuing "policies to enable people who work in Portland to have the option to live in Portland." To be considered affordable, housing should consume no more than 30% of a household's income including rent, mortgage, utilities and other household related costs. Of the 1,130 housing units that were permitted and/or built in Portland between 2010 to 2014,

including apartments, condominiums and single-family homes, just 29% were offered at a rent or sales price affordable to a household earning the median income[i].



The Maine Office of Tourism estimates over 6 million tourists visited Portland in 2017. Hotel development is steadily increasing, with 1,811,050 square feet of hotel development - representing 2,647 units - currently in operation throughout the City. According to the US Census, the accommodation and food service sector is the third largest share of employment in Cumberland County, representing 10% of the County's workforce but only 5% of the County's payroll.

According to the Maine State Housing Authority the average rent (including utilities) for a two-bedroom apartment in Portland is $1,053 per month, and the household income needed to afford the average rent in Portland is $42,111 per year. However, this is the average rent paid by existing renters in Portland and new households moving to Portland will pay the current market rate, which is generally higher than the average rent. As of June 15, 2018, there are roughly 60 two-bedroom apartments listed for rent in Portland on Zillow, with monthly rents ranging between $1,300-$3,500. One third of those apartments are listed with rents between $1,500 and $2,000, and another third of those apartments are listed for more than $2,000 per month. Therefore, a new household moving to Portland will expect to pay between 120%-330% of the average rent to live in the City.

There are a range of estimates available regarding the average wages of a full-time employee in this sector, and all are well below the household income needed to afford housing in Portland. According to the US Census, the average Cumberland County employee in this sector earns $312 a week or $16,227 per year. The Maine Department of Labor (DOL) estimates the median income for a full-time

Cumberland County employee in this sector to be significantly higher, $24,908 per year. Additionally, as of 2017 the minimum wage in Portland is $10.68/hour, so a full-time employee making this salary would earn an annual income of $22,214. This affordability gap may force accommodation workers employed in Portland to seek housing outside of Portland.

Data

The minimum justified fee per square footage of hotel development outlined in this memo is based on data from both the US Census American Community Survey (ACS), and wage data from the Maine Department of Labor (DOL).

The US Census American Community Survey (ACS) data in this memo was used because it is the most comprehensive and consistent data source for demographic and economic characteristics of the population in GPCOG's service area. However, there are some limitations to the ACS data. First, it is 5-year sample data because this is the only data consistently available at the municipal, county, and state level. The drawback to using data pooled over five years is it averages out any short-term changes in income due to economic cycles or Portland's more recent minimum wage increase. Second, the median earnings reported by the ACS are based on what individuals report for their earnings regardless of whether they work full-time or part-time. As a result, these earnings may be skewed lower by individuals who work part-time, which may be more common for employment in the retail, food service, or accommodation sectors.

To balance these limitations, the median weekly wage data from the Maine DOL was also included in the analysis. The Maine DOL wage data is from the Quarterly Census of Employment and Wages (QCEW), which is based on employment and wage data reported to the Unemployment Insurance (UI) of the United States. The Maine DOL data also has some limitations. First, the data are only available at the industry level, so it is not possible to calculate the affordability gap for different occupations in the hotel sector. Second, the average weekly wage reported by the QCEW also does not differentiate between full-time and part-time employment. As a result, the weekly wage data reported by the Maine DOL may be skewed both by higher wage occupations and by part-time employment. The average weekly wage reported by Maine DOL was used to calculate yearly income based on full-time employment. This also assumes individuals employed in the accommodation sector can work full-time if they are willing and able to[ii].

Methodology

Methodologies used to calculate linkage fees vary, but in most cases the analysis begins with an estimation of the number of new employees associated with a typical development, in this case a hotel. In this methodology, a formula is used to calculate the affordability gap between what workers can afford to pay for housing and the average cost of market rate housing.

In Portland's case, a link is established between the creation of new jobs in the hotel sector and the increased demand for affordable housing through the following steps:

- **New Jobs.** Industry data was used to estimate the number of direct jobs that will be created by a new hotel with 180 units. According to the Urban Land Institute the typical hotel employs between 0.5-0.8 employees per hotel room. Using an average value of 0.65 employees per hotel room, it is estimated that a hotel with 180 rooms will employ 117 people. The current ratio of jobs per household was used to estimate how many households will be created by this new employment.
- **Households.** Currently there are 37,737 employed civilians aged 16 and over within the 30,211 total households in Portland. This means that on average there are 1.2 jobs per every household in Portland. Based on this ratio it is estimated that the 117 additional jobs created by a new hotel will create 94 new households in Portland. However, it is assumed employment in these households will be split up between different occupations, such as management, sales, service, and maintenance. The wages for each specific occupation may be higher or lower than the median wage for the hotel industry. Therefore, industry occupation employment and wage data examined from the ACS was used to estimate how many new households will be low income.

EMPLOYED POPULATION PER HOUSEHOLD 2016

	Portland	Cumberland County	Maine
Employed Civilian Population 16+	37,737	155,014	652,638
Total Households	30,211	117,871	551,109
Jobs/Household	1.2491	1.3151	1.1842

Source: American Community Survey 2016 5-year estimate

- **Jobs by Occupation.** Based on industry and occupation employment data from the ACS 64% of jobs in the hotel industry are service occupations, 19% of hotel jobs are management occupations, 13% of hotel jobs are sales and office occupations, and the remainder are maintenance and transportation occupations. The total number of jobs and households that will be created in each occupation was calculated by multiplying the share of hotel employment by occupation by the total number of new hotel jobs created.

NEW JOBS AND HOUSEHOLDS BY OCCUPATION CREATED BY NEW HOTEL EMPLOYMENT

	Share of Hotel Employment	Number of New Jobs	Number of New Households
Service	**64%**	**74**	**60**
Sales and Office	13%	15	12
Transportation	4%	4	3
Maintenance	1%	1	1
Management	19%	22	18
Total - All Occupations	100%	117	94

Source: American Community Survey 2016 5-year estimate; GPCOG Analysis

- **Household Income**. Median wage by occupation data for Cumberland County from the ACS was used to calculate the household income for each household in each occupation category. This calculation assumes 1 person in each new household works full-time in the hotel industry and any additional workers in the household earn the area median income:

NEW HOUSEHOLDS AND HOUSEHOLD INCOME BY OCCUPATION (ACS DATA)

	Number of New Households	Median Wage for Hotel Income Earner	Median Wage for Second Income Earner	Total Household Income
Service	**60**	**$18,109**	**$9,015**	**$27,124**
Sales and Office	**12**	**$30,444**	**$9,015**	**$39,459**
Transportation	**3**	**$31,695**	**$9,015**	**$40,710**
Maintenance	1	$33,421	$9,015	$42,436
Management	18	$52,910	$9,015	$61,925

Source: GPCOG Analysis and American Community Survey 2016 5-year estimates

Median wage by industry data from the Maine DOL was also used to calculate the average household income for the 94 new households created by hotel employment:

NEW HOUSEHOLDS AND HOUSEHOLD INCOME (MAINE DOL DATA)

	Number of New Households	Median Wage for Hotel Income Earner	Median Wage for Second Income Earner	Total Household Income
Accommodation	**94**	**$24,908**	**$12,164**	**$37,072**

Source: GPCOG Analysis and Maine DOL QCEW 2016

- **Affordability Gap.** These estimates for household income by occupation were compared to housing affordability data from the Maine State Housing Authority to show the difference between what the new households created by hotel employment earn and the minimum income needed to afford a two-bedroom apartment in Portland. These results show that households with Service, Sales and Office, and Transportation occupations have a household income that is lower than the minimum income needed to afford rental housing in Portland. This household affordability gap is largest ($14,987) for households with Service occupations, which also represent nearly 2/3 of households created by the new hotel employment.

AFFORDABILITY GAP ANALYSIS (ACS DATA)

	Number of New Households	Total Household Income	Income Needed to Afford Rent in Portland	Household Affordability Gap	Total Affordability Gap
Service	**60**	**$27,124**	**$42,111**	**$14,987**	**$892,820**
Sales and Office	**12**	**$39,459**	**$42,111**	**$2,652**	**$32,048**
Transportation	**3**	**$40,710**	**$42,111**	**$1,401**	**$4,856**
Maintenance	1	$42,436	$42,111	NA	$0
Management	18	$61,925	$42,111	NA	$0
Total					**$929,724**

Source: Maine State Housing Authority, 2017; American Community Survey 2016 5-year estimates

The household affordability gap using the median wage by industry data from the Maine DOL was also calculated:

AFFORDABILITY GAP ANALYSIS (MAINE DOL DATA)

	Number of New Households	Total Household Income	Income Needed to Afford Rent in Portland	Household Affordability Gap	Total Affordability Gap
Accommodation	**94**	**$37,072**	**$42,111**	**$5,039**	**$472,007**

Source: Maine State Housing Authority, 2017; Maine DOL QCEW 2016

- **Aggregate Affordability Gap.** The household affordability gap for each occupation was multiplied by the number of households with employment in each occupation to arrive at a total affordability gap that ranges between $472,007 and $929,724 per year. This number represents the difference between these households' ability to pay for their housing and the market cost of their housing based on the median monthly rent, for one year. In reality these

households may face higher rental housing costs since current Portland rents for new units are significantly higher than the median rent.

- **Final Calculation.** Dividing the affordability gap by the number of new hotel rooms results in an average affordability gap that ranges between $2,622 and $5,165 per room, or between $3.91 and $7.70 per square foot. Therefore, a fee between ***$3.90-$7.70 per square foot*** would cover a minimum justified housing affordability gap for the 94 new households created by a new 180-unit hotel employment for one year. This methodology assumes the median wage for a hotel income earner in the service industry, including full-time and part-time employees, is $18,109 based on US Census ACS data. If it is instead assumed that hotel service industry employees are working full-time at the City's minimum wage of $10.68/hour and making $22,241 annually, then the minimum justified fee would be between $2,622 and $3,806 per room or ***$3.90-$5.67 per square foot*** of hotel development for one year. However, this assumes individuals working in the service sector are able to procure full-time employment, which is not always the case[ii].

This example estimate represents the full cost of the affordability gap for employment in one hotel for one year as calculated by the proposed methodology. Multiple factors could potentially impact the demand for affordable housing and the City may determine a higher or lower percentage of this fee based on these variables. Furthermore, this fee could be re-evaluated periodically as circumstances such as inflation, rents, and rental housing supply change.

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[i] Portland 2030 Housing Demand, GPCOG 2015

[ii] According to a 2016 study (https://www.epi.org/publication/still-falling-short-on-hours-and-pay-part-time-work-becoming-new-normal/#epi-toc-21) from the Economic Policy Institute the retail trade and leisure and hospitality sectors contributed to 63% of the growth in part-time employment and 54% of the growth in involuntary part-time employment from 2007-2015. Involuntary part-time employment is defined as individuals who are working part time because full time work could not be found or hours were reduced due to economic conditions (slack work).

(Excerpt from City's of Portland Housing and Community Development Division's Interim Housing Report providing HUD AMI Levels, Nov. 2018)

2018 INCOME LIMIT- PORTLAND HUD METRO AREA

The U.S. Department of Housing and Urban Development (HUD) computes income limits for Portland based on local Area Median Income (AMI). At least 11 HUD programs and 14 other federal programs use some variation of HUD's income limits. Portland applies HUD's income limits to determine and monitor household eligibility with the City's Inclusionary Zoning and Low-Income Housing programs, and for residential housing federally funded through HOME and Community Development Block Grants (CDBG).

The chart below depicts the maximum income level for various household sizes using HUD's AMI designations. HUD describes households in the 30% AMI bracket as extremely low-income. 50% AMI is also known as very-low income households. 80% AMI households are low-income earners, and 100% to 120% AMI are commonly known as workforce housing households.

Household Size

AMI	1	2	3	4	5	6	7	8
30%	**$18,950**	**$21,650**	**$24,350**	**$27,050**	**$29,250**	**$31,400**	**$33,550**	**$35,750**
50%	**$31,550**	**$36,050**	**$40,550**	**$45,050**	**$48,700**	**$52,300**	**$55,900**	**$59,500**
60%	**$37,860**	**$43,260**	**$48,660**	**$54,060**	**$58,440**	**$62,760**	**$67,080**	**$71,400**
80%	**$50,350**	**$57,550**	**$64,750**	**$71,900**	**$77,700**	**$83,450**	**$89,200**	**$94,950**
100%	**$63,070**	**$72,080**	**$81,090**	**$90,100**	**$97,308**	**$104,516**	**$111,724**	**$118,932**
110%	**$69,400**	**$79,300**	**$89,200**	**$99,100**	**$107,050**	**$115,000**	**$122,900**	**$130,850**
120%	**$75,700**	**$86,500**	**$97,300**	**$108,100**	**$116,750**	**$125,400**	**$134,050**	**$142,700**

Source: HUD, 2018 Income limits – Portland HUD Metro FMR Area

PORTLAND IMPACT FEE ANALYSIS

SUMMARY
9/24/2018

DRAFT

Colliers INTERNATIONAL

	Downtown Hotel	Suburban Airport Hotel
# of Residential Units		
# of Hotel Room Keys	150 Keys	200 Keys
Surface Parking GSF		65,000 GSF
Structured Parking GSF		
Development GSF (ex. Parking)	52,500 GSF	70,000 GSF

Total Development Cost (Without Impact Fee)	$22,775,860	$27,270,015
$/Unit/Key/GFA (Without Impact Fee)	$151,839.06/ Key	$136,350.08/ Key

Estimated Impact Fee to Developer	**$522,026**	**$685,976**
Percent of TDC	**2.29%**	**2.52%**

Hotel Inclusionary Fee	**$570,900**	**$761,200**
Percent of TDC	**2.51%**	**2.79%**

TOTAL (ALL FEES)	$ 23,868,786	$ 28,717,191

IRR (**Without** Impact Fee)	10.19%	10.95%
IRR (**With** Impact Fee)	9.63%	10.33%
IRR (With Impact Fee & Inclusionary Fee)	9.04%	9.68%
Difference in IRR (Impact fees only)	**0.56%**	**0.62%**
Difference in IRR (Impact fees and Inc. Fee)	**1.14%**	**1.28%**

ROI (**Without** Impact Fee)	5.85%	6.46%
ROI (**With** Impact Fee)	5.50%	6.01%
ROI (With Impact Fee and Inclusionary Fee)	5.16%	5.58%
Difference in ROI (Impact fees only)	**0.35%**	**0.45%**
Difference in ROI (Impact fees and Inc. Fee)	**0.69%**	**0.88%**

Portland, Maine Yes. Life's good here.

Jeff Levine, AICP
Director, Planning & Urban Development Department

Memorandum

To: Housing Committee

From: Jeff Levine, Director

Date: August 29, 2018

Re: Hotel Linkage Update

Since you referred the issue of a proposed hotel linkage program to the Planning Board, staff has had additional internal discussion, as well as a constructive set of meetings with representatives from the hospitality industry to better understand their market. As a result of these discussions, we are bringing this item back to the Housing Committee for an update and potential revised referral.

- Change to the Draft Ordinance: Based on additional conversations with Corporation Counsel – which we mentioned at the previous discussion – we are recommending a revision to the draft ordinance that adopts a methodology similar to the inclusionary zoning ordinance in 14-387. That revision would provide a first option for all hotel uses to provide low-income housing units for sale or rent on-site. Those units would have to be differentiated from the rest of the development through deed restrictions and other requirements to ensure that they would be used for permanent affordable housing.

  If the hotel developer does not want to provide these units on-site, then the option would exist for a fee-in-lieu. That fee-in-lieu, which we think many hotel developers would prefer, would be based on the nexus study. We think these revisions result in a stronger ordinance and tie the goals of the ordinance more closely to the process that would be used to implement it.

- Updated GPCOG Study: We asked the Greater Portland Council of Governments to update their hotel linkage study with additional data we have collected from the Maine Innkeepers Association. They have been kind enough to provide comments on the earlier study and pointed us to additional data sources that we asked GPCOG to incorporate into an updated study. As a result, they have a revised study with a range of possible fees in lieu that could be provided should a hotel development choose not to provide their units on-site. GPCOG's revised range is from $2,622 to $5,165 per room. This range includes a fee-in-lieu of $2,622 based on Maine Department of Labor Data – which is more specific in some ways but does not differentiate between types of employees in the accommodation sector. It also includes a fee-in-lieu of $3,806 if the more differentiated American

Community Survey data is utilized, but an assumption is added that no employee earns less than they would earn at the City's minimum wage at a full-time position. Finally, it includes a fee-lieu number of $5,165 if the original assumptions and methodology is used.

Staff feels that any of these three options are reasonable. However, staff recommends that the ordinance utilize the $3,806 per room fee, as it incorporates the minimum wage requirement in effect, but also retains the diversity of employment types captured in the American Community Survey data.

Portland, Maine Yes. Life's good here.

Jeff Levine, AICP
Director, Planning & Urban Development Department

Memorandum

To: Housing Committee

From: Jeff Levine, Director

Date: June 21, 2018

Re: Hotel Linkage – Revised Nexus Study and Draft Ordinance

As per your direction at your June 5, 2018, meeting, we have worked with the Greater Portland Council of Governments to revise their nexus study and also drafted a proposed ordinance based on that study. Both are attached.

The nexus study revisions were based on three major comments, which are repeated with their responses and staff comments below:

- *Income needed to afford rent seems low*. GPCOG used Maine Housing data in the initial memo. To address the concern of the subcommittee they added language about the limitations of the Maine Housing data.
- *Static Affordability Gap*. The methodology used to address the affordability gap only covers a single year because it is using annual salary as the basis for the calculation. To research the answer to this question, GPCOG staff reached out to Karl Seidman, a consultant who has completed several of these studies throughout the country, to ask how he would approach this issue. He said the methodology is rational and perhaps we could use a financing guideline to determine a duration of time. They also contacted both Maine Housing and Avesta but were unable to find any relevant guideline to assign a duration of time. Karl suggested it's likely the City would simply need to make a decision about how many years it wanted to use in the calculation. Given that using even one year's impact results in a range of per-room fees up to $5,165, staff does not recommend going above that level at this time.
- *Revise to Linkage Fee Terminology*- They edited the memo accordingly. Staff recommends using the term "Hotel Linkage Fee" rather than "Housing Impact Fee" in order to avoid confusion about this proposed ordinance and the Impact Fee study and proposed ordinance under development for transportation, stormwater/sewer and parks/open space.
- *Jobs per Household Data*- GPCOG's methodology used Cumberland County data for jobs created per household. They changed this data to reflect Portland's geography.

Hospitality Land-Use Types - Definitions

(Excerpt from City of Portland Land Use Code, Sec. 14-47. Definitions.)

Hotel: A building used for more or less temporary occupancy of individuals who are lodged with or without meals, having ten (10) or more guest rooms. No owner, operator, employee, shareholder, partner, corporate officer or agent of a bed and breakfast facility, hostel, hotel, inn, lodging house, motel, or tourist home (as defined in this code) may, for direct or indirect economic remuneration, arrange for or provide any housing accommodations including but not limited to long term, short term or overnight accommodations for an actual or potential guest, customer, or patron of the business at any offpremises site in the City, unless such a facility is authorized under the applicable provisions of Portland's Land Use Code, to offer such accommodations as a bed and breakfast, hotel, inn, lodging house, motel or tourist home.

Inn: A building used for more or less temporary occupancy of individuals, who are lodged with or without meals, having ten (10) but no more than fifty (50) rooms. Guest rooms shall not contain separate kitchen facilities. No owner, operator, director, employee, shareholder, partner, corporate officer or agent of a bed and breakfast facility, hostel, hotel, inn, lodging house, motel, or tourist home (as defined in this code) may, for direct or indirect economic remuneration, arrange for or provide any housing accommodations including but not limited to long term, short term or overnight accommodations for an actual or potential guest, customer, or patron of the business at any off-premises site in the City, unless such a facility is authorized, under the applicable provisions of Portland's Land Use Code, to offer such accommodations as a bed and breakfast, hotel, inn, lodging house, motel or tourist home.

Motel: A building or group of attached or detached buildings containing guest rooms or dwelling units most of which have separate outside entrances and parking space hereby intended to be used principally by automobile transients for compensation. Motels include tourist courts, motor lodges or cabins. No owner, operator, director, employee, shareholder, partner, corporate officer or agent of a bed and breakfast facility, hostel, hotel, inn, lodging house, motel, or tourist home (as defined in this code) may, for direct or indirect economic remuneration, arrange for or provide any housing accommodations including but not limited to long term, short term or overnight accommodations for an actual or potential guest, customer, or patron of the business at any off-premises site in the City, unless such a facility is authorized, under the applicable provisions of Portland's Land Use Code, to offer such accommodations as a bed and breakfast, hotel, inn, lodging house, motel or tourist home.

PLANNING BOARD REPORT
PORTLAND, MAINE

100 Fore Street
Application for a Level III Site Plan at 100 Fore Street
100 Fore Street LLC

Submitted to: Portland Planning Board	Prepared by: Christine Grimando, Senior Planner
Date: January 4, 2019	CBLs: 019 A010
Public Hearing Date: January 8, 2019	Project #: PL-000358-2018

I. INTRODUCTION

100 Fore Street, LLC has applied to the Planning Board with a Level III site plan review of a proposed three-level parking garage with two levels of commercial office space above on a 2.97-acre lot, mixed uses along Fore Street, and renovation of a portion of an existing building for a fitness center. The Planning Board previously held workshops on October 23rd and November 27th.

The newest application materials reflect updated site layout, building design, traffic analysis, and stormwater analysis.

Notice of this public hearing appeared in the *Portland Press Herald* on December 29th and December 30th. Notices were sent to 172 property owners within 500 feet and to the interested citizens list.

Applicant: 100 Fore Street, LLC
Consultants: Stantec Consulting Services, Archetype PA, Cianbro, ALA Landscape Architecture

Neighborhood Meeting: A neighborhood meeting was held on October 24, 2018.





Figures 1 & 2. Top Image, 100 Fore Street from Fore looking east. Bottom image, 100 Fore St. from Fore looking south.

II. REQUIRED REVIEWS

Waiver Requests	*Applicable Standards*
Driveway separation	Technical Manual Section 1.7.2.7. Applicant is requesting a waiver from the section, which requires the location and spacing of driveways to be

	farther from the intersection than the proposed location of the P2 parking garage entrance from Fore Street. Fore Street, a collector street, has a spacing requirement of 150 feet. Staff supports approval of this waiver request in conjunction with conditions.
Flooding Standard	Technical Manual Section 5, Portland Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management. Staff supports approval.
1st floor mixed use for structured parking	Land Use Code Section 14-270(b).i Staff supports approval.

Review	*Applicable Statute*
Site Plan	Section 14-526

III. PROJECT DATA

Existing Zoning	B-6/B-6 Height Overlay
Existing Use	Surface Parking (136 spaces), single story building with multiple tenants (29,675 sf).
Proposed Use	Structured parking, office, retail.
Proposed Development Program	Three-level parking garage (539 spaces total) with two levels of commercial office space: Ground Level Parking 64,646 SF (183 Spaces) Level 1 Parking 64,821 SF (178 Spaces) Level 2 Parking 65,060 SF (178 Spaces) Level 3 Commercial Office 43,380 SF Level 4 Commercial Office 39,569 SF Additional Street Level Retail 3,404 SF Total +/-280,143 SF Fitness Center (renovated existing space) +/-9,100 SF
Parcel Size	2.97-acre lot

	Existing	*Proposed*	*Net Change*
Building Footprint	29,675 SF	+/- 65,046 SF	35,371 SF
Building Floor Area	29,675 SF	+/- 277,562 SF	247,887 SF
Impervious Surface Area	9,103 SF	13,847 SF	4,744 SF
Parking Spaces	140 (including 4 handicap spaces)	539	399
Bicycle Parking Spaces		45	45
Estimated Cost of Project	$23 - $31 million		

IV. CONTEXT

Current Uses

Currently the parcel is occupied by surface parking and a single-story warehouse building occupied by a mix of uses, including Hamilton Marine, Xpress Copy, and other office and service uses.

Surrounding Uses

The property fronts Fore Street and sits perpendicular to Mountfort Street, bounded to the east by the Portland Company site, to the north by the residences of Munjoy South, and portions of the Shipyard Brewery and the Marriot Residence Inn properties, to the south offices and surface parking followed by the Eastern Promenade Trail and Ocean Gateway, and to the west the varied uses - office, hotel, retail, and residential - of the India Street neighborhood.

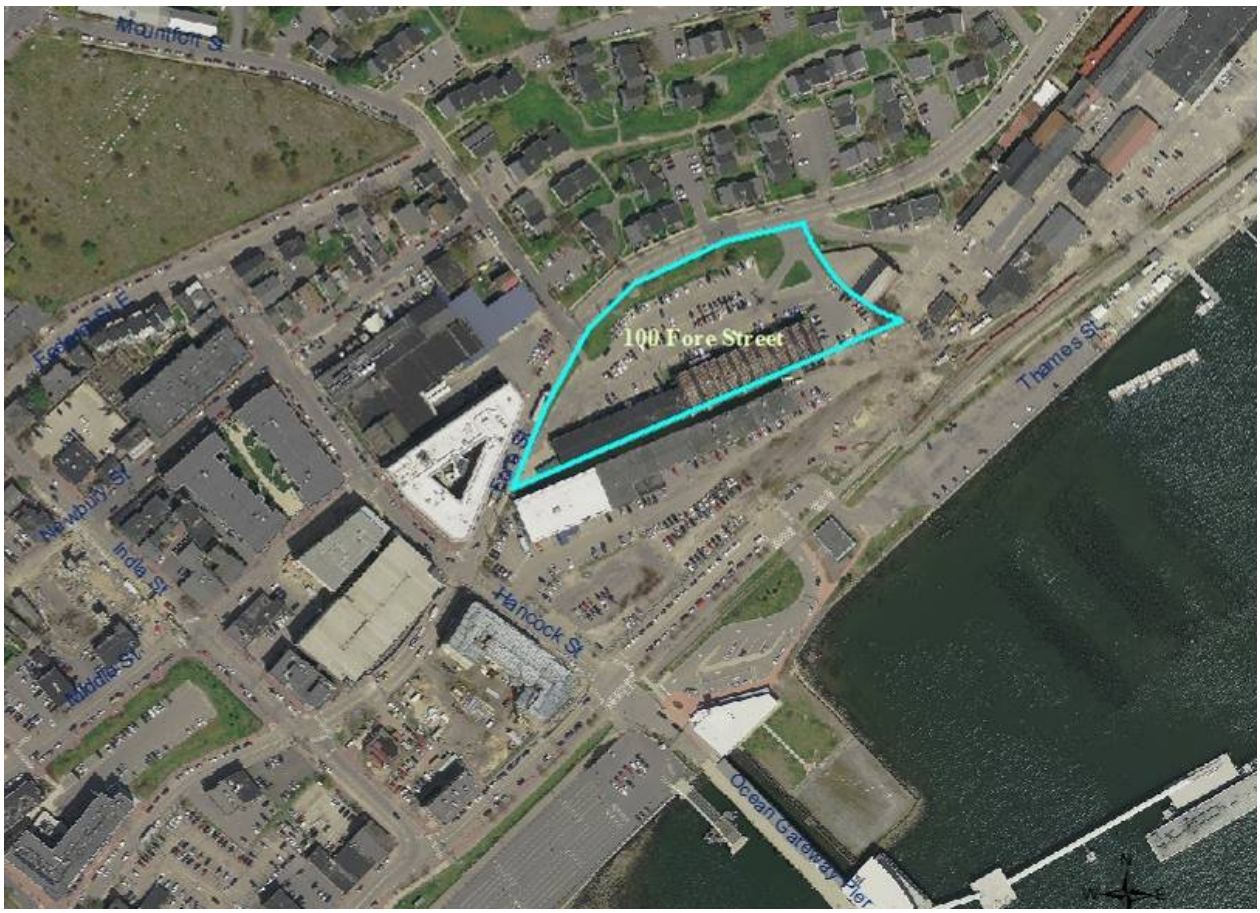

Figure 3. Aerial view, 100 Fore Street and surroundings

The parcel is in the B-6 zone and is surrounded by residential, waterfront and mixed-use zones. The B-6, though it is not a waterfront zone, grew out of recommendations for the Eastern Waterfront for a mixed-use zone that was compatible with waterfront uses and the nearby Eastern Waterfront Port Zone (EWPZ). The B-6, encompassing 100 Fore Street, occupies the upland, mixed-use portion of the Eastern Waterfront, and has no marine-dedicated requirements, though it allows for supportive services, such as fuel storage and marine supply stores. 100 Fore Street is also abutted by the R-6 zone and the residential neighborhoods of Munjoy Hill, and the IS-FBC zone, a neighborhood with both residential and commercial uses. The Eastern Waterfront includes the Ocean Gateway Marine Passenger Terminal; 58 Fore Street/Portland Company site, recently approved for a master development plan and the site of a new historic district; a marina; and a sailing school. The area is the locus of significant planning initiatives, public investment, and private development. Examples of public initiatives to support the Eastern Waterfront and surrounding area include: a road and utility extension of Thames Street, new public open space and waterfront access in the location of the Amethyst Lot, and a study to improve

transportation and circulation for the Commercial Street corridor. Examples of private development recently completed or underway include the WEX headquarters (1 Hancock), redevelopment of the Shipyard Brewery site (86 Newbury Street), the Ocean Gateway Garage addition (167 Fore Street), and the AC Hotel (158 Fore Street).

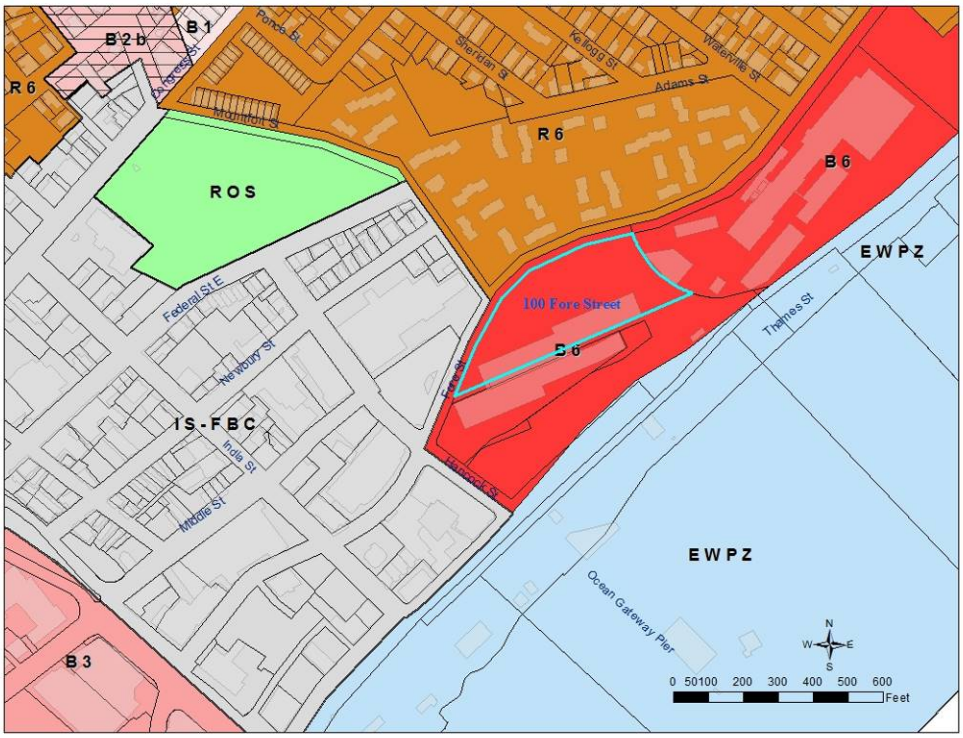

Figure 4, Zoning Context

V. PROPOSED DEVELOPMENT

The proposed development includes a three-level parking garage with two levels of commercial office space above and retail on Fore Street. Currently an active site with office, retail and commercial services, and surface parking, the existing one-story building will be partially demolished. Approximately 9,100 sf of the existing building is proposed to be retained for redevelopment as a fitness center to serve employees at 1 Hancock Street. Also included in the proposal is a design that anticipates a future street connection from the Thames Street extension to Fore Street.

VI. PUBLIC COMMENT

The Planning Division has received six written comments on the 100 Fore Street application, as well as public testimony at the previous workshops, that expressed concern about the addition of new parking spaces, increased traffic congestion, parking as a use in a space that might otherwise provide housing, the economic and environmental necessity of reducing the city's auto dependency, climate resilience, and the blocking of views of the waterfront.

VII. RIGHT, TITLE, & INTEREST

The application includes a quitclaim deed as evidence of right, title, and interest (Attachment E).

VIII. FINANCIAL & TECHNICAL CAPACITY

The estimated cost of the project is $23 - $31 million. The applicant has provided a letter from the Bank of New Hampshire attesting to their financial capacity (Attachment F).

IX. SITE PLAN SUBMISSION REQUIREMENTS (Section 14-527)

The application has been reviewed against the submittal requirements of the site plan ordinance. All required documentation has been submitted.

X. SITE PLAN REVIEW *(Section 14-526)*

The proposed development has been reviewed for conformance with the relevant review standards of the City of Portland's site plan ordinance. Staff comments are below.

1. Transportation Standards

a. *Impact on Surrounding Street Systems.* The application includes an initial traffic assessment (Attachment I) and a traffic impact study (Attachment V), and is also participating in a new Eastern Waterfront Transportation District Traffic Movement Permit, currently being administered by Maine Department of Transportation. This Eastern Waterfront Transportation District application is a collaborative effort, initiated and coordinated by the Department of Planning & Urban Development, to put forward a robust and holistic approach to traffic and transportation demand management in an area undergoing numerous substantial developments in a relatively short period of time. The co-applicants include the Shipyard site redevelopment (86 Newbury Street), WEX, 100 Fore Street, and the City-owned parcel between Thames Street (in the interim referenced as 0 Thames Street). Approval of and full compliance with the outcomes of the District TMP is recommended as a condition of approval prior to obtaining a certificate of occupancy.



Figure 5, Eastern Waterfront TMP participating properties

b. Access and Circulation

The proposed site plan shows vehicular access to the site from Fore Street, including vehicular access to the building to the west and two building entrances on the east side of the building where the current access to the site is, reconstructed to meet City street standards and designed to be able to connect to the Thames Street ext. Pedestrian access is also shown as provided on the east and the west facades of the building. An existing drive to the existing building to the west of the site was initially proposed to be maintained for loading purposes but it is recommended that this be closed and trash collection relocated. This will bring the site to conformity with the Technical Manual standards for number of driveway openings. Greater specificity for location of deliveries, loading, trash pick up on the site plans is needed on the final plan set.

The design for the connector road from Fore Street to Thames is included on the site plan, with a proposal to construct the portion on the 100 Fore Street property, directly serving this site to City street standards. The remainder of the connection to the Thames Street ext. is not on the applicant's property but integration of the applicant's road layout and the City's and the needs of the adjacent property owner at 58 Fore Street have been included in the current iteration of the connector road specifications.

The garage entrance nearest to Fore Street on the Fore Street Connector has been an area of concern for safe access and circulation. The traffic engineering review by Thomas Errico (Attachment 2) includes comments on this aspect of the site design, including a request that analysis of internal garage ramping that would eliminate the need for driveway entrance P2 be provided, and if determined this is not feasible, that field monitoring be jointly undertaken by City staff and the applicant's traffic engineer every 6 months up to and following occupancy. If this monitoring identified safety or operational problems, it would be recommended that left turn exit movements be prohibited through appropriate means, whether physical design, signage, parking garage management or a combination of these.

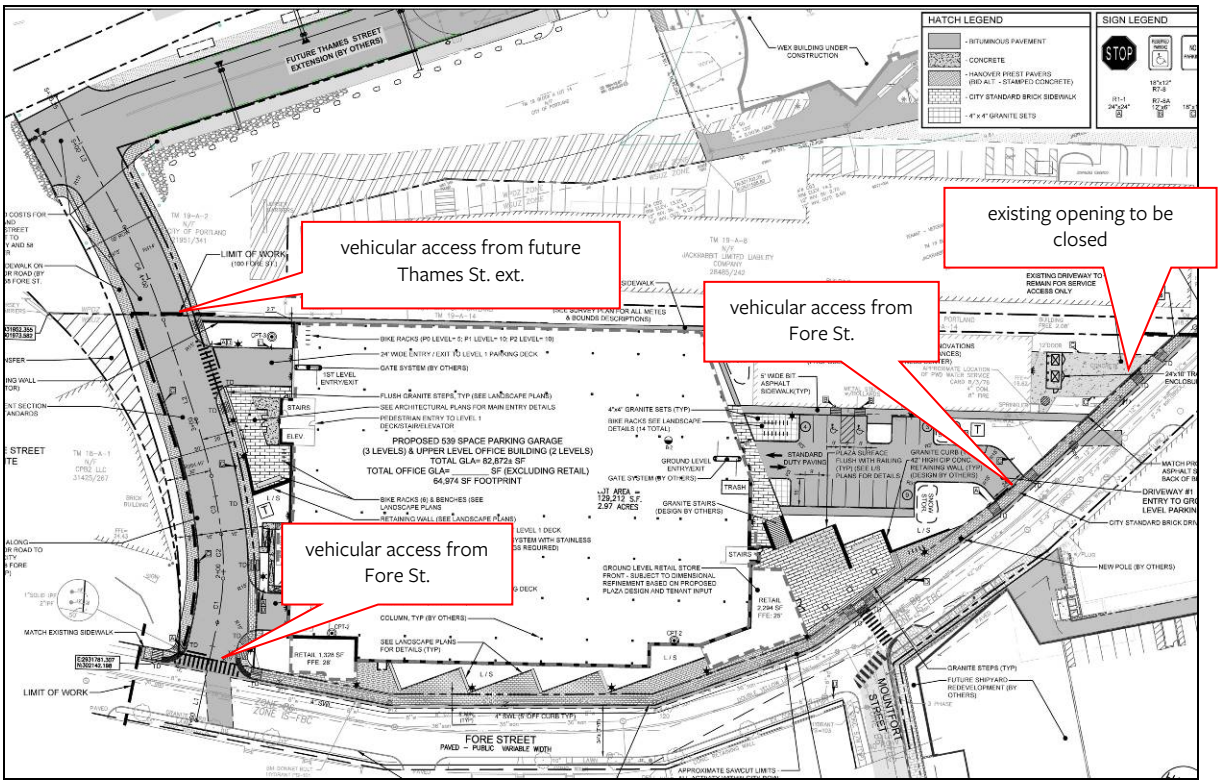

Figure 6, 100 Fore Street Site Plan vehicular access

The existing sidewalks along Fore Street are quite narrow, and the applicant proposes to widen the sidewalk to 10' in some areas and replace the existing concrete sidewalk with brick, an improvement in an area with narrow sidewalks. The width of sidewalks shown on the site plan are variable but all wider than the current conditions. Future crosswalks and sidewalk changes that have recently been approved as part of the Shipyard redevelopment are now incorporated into the site plan.

The anticipated connection between Fore Street and the Thames St. ext. and the Mountfort Street extension have been anticipated elements of neighborhood permeability in the Eastern Waterfront since planning efforts in the early 2000s and they continue to be maintained as elements on the B-6 Building Height Overlay (Figure 7). Though a full connection to the Thames Street ext. in the Fore Street connector area is not proposed by this development, a valuable piece of infrastructure is added by this project's easterly access drive.

The notes of the B-6 Height Overlay indicate the site plan review process will determine precise layout and design of the Mountfort Street ext. The Mountfort Street ext. runs across an area of steep grade changes and through existing building, driveways and parking, and so the potential for vehicular access to Thames Street in this area is limited. However, no new buildings are permitted, and the project proposes some ways Mountfort Street extension area could begin to be used for pedestrian circulation and neighborhood permeability. Though the full corridor can't be planned for in the scope of this review, this is an opportunity to begin that process. A condition is being recommended for a public access easement across the Mountfort Street extension.

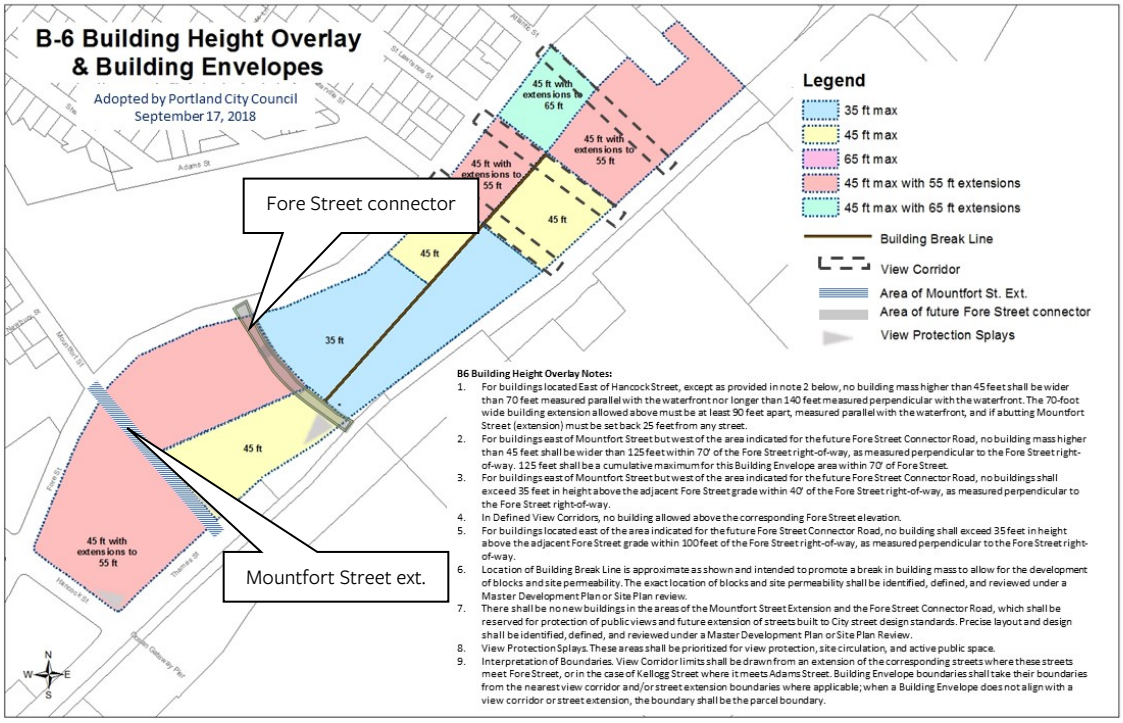

Figure 7, B-6 Height Overlay

Staff recommends that language be incorporated into the Construction Management Plan that provisions be made to eliminate the occurrence of on-street parking by those involved with the project's construction and that non-essential vehicles park off-site. The final construction management plan will also require coordination with other planned construction in the immediate area in the same or overlapping time period.

c. *Public Transit Access*

The applicant initially requested a waiver from 14-526(a).3, which requires that a commercial development of this size construct a transit facility if it meets certain location and distance criteria. The waiver request has been withdrawn as the application did not meet the location and distance criteria that would trigger the requirement as there are transit facilities within a quarter mile from the site.

d. *Parking*

The plan includes 539 parking spaces to serve the uses on-site, to serve parking needs at 1 Hancock Street (WEX), and to serve other users. Division 20 of the City's Land Use Code establishes the parking requirements for the B-6 zone. For projects 50,000 sf+ the Planning Board sets the parking requirement based on a parking analysis and based on the recommendation of the City transportation engineer. Developments proposing to exceed minimum parking requirements by more than 10% have to demonstrate through a parking analysis that the amount of parking is appropriate for the proposed use of the site. The parking requirement for the uses proposed is 215 spaces, and the applicant's parking assessment indicates a parking demand of 218 for the future tenants. Using the application's parking analysis (Attachment W), this produces a produces a balance of 321 spaces (324 according to the Land Use Code). The parking is also intended to meet the requirement of the Purchase and Sale agreement from the 2017 purchase of the property at 1 Hancock Street (WEX), which states that the buyer will

construct new parking of between 450-550 parking spaces within 750 feet of 1 Hancock Street for public use. The 539 spaces are all considered part of fulfilling this requirement and of meeting needs for the area beyond this site alone. The 321 spaces not intended to be used by the building tenants are proposed to be "leased to other tenants and/or available for general public parking." Further spaces may be freed up for public use over time through a successful TDM program, which should further reduce parking demand. A condition to dedicate certain of these parking spaces to municipal use is proposed. Also proposed is a condition for a final parking management plan to be developed prior to occupancy to address both traffic circulation to and from the site and management of spaces.

e. *Bicycle parking*
The required amount of bicycle parking is 20 spaces for the first 100 required vehicular parking spaces and 5 for every 20 required vehicular parking spaces above the first 100. The total required bicycle spaces for the on-site uses is 25. For all the vehicular parking spaces on-site, using the same formula, bicycle parking provided would need to be 41-42 spaces. The applicant is providing a total of 45 indoor and outdoor spaces.

f. *Transportation Demand Management*
A TDM plan is required for all commercial or institutional uses of 50,000 sf or more total floor area. A robust TDM plan has been submitted, and comments have been provided to the applicant to strengthen and clarify the proposed methodology (see Attachment U).

2. Environmental Quality Standards

a. *Preservation of Significant Natural Features/Landscape Preservation*
The site contains no significant natural features to preserve. The applicant has demonstrated there are no qualifying significant natural features to preserve, and originally requested a waiver from this standard. Staff recommended this waiver be withdrawn since the standard doesn't apply to the site.

b. *Landscaping*
The applicant has submitted some conceptual plans showing landscaping along the Fore Street façade, entrance drives, and surface parking areas. Concept plans show trees, a living roof, and vegetative screening of portions of the parking lot. The City Arborist has provided comments on the landscaping plan (Attachment 21), finding it generally an acceptable proposal but with a number of suggested modifications. These include suggestions for some different species of plantings - Street-keeper Honeylocust instead of Princeton American Elm, for instance – for greater salt tolerance; number, location, and spacing, to maximize viability. Other recommended changes to tree and plant types include:

The tree planting along Fore Street are vitally important to the project. The proposed 'Armstrong' Red Maple is a favorable tree type that would work along Fore Street, similar Red Maple cultivar, 'Bowhall' is slightly wider and might be preferred, both are available in trade at similar unit pricing. Birch grove - 'Renaissance Reflection' White Birch has proven to be a hardier type of White Birch that would give the same effect. 'Heritage' River Birch might be a alternative species type knowing the possible sensitivity of White Birch in dry urban conditions.

The City Arborist also recommends a landscape treatment for the parking lot space near the handicap parking and clarifications to the symbology and detail sheets of the planting plans. Finalization of the landscaping plan based on the Arborist's comments is recommended as a condition of approval.

c. *Water Quality/Storm Water Management/Erosion Control*
Existing conditions on the site are nearly entirely impervious with a limited drainage system. Runoff goes into catch basin inlets and sheet flows off the property. The applicant is proposing a roof drainage system that will connect to the Fore Street sewer, with provisions for future sewer separation. Green roofs and other water quality measures are proposed. Redevelopment of this site, in treating runoff from the site that currently does not receive any treatment measures, offers an improvement to water quality for the City and for Casco Bay.

The applicant has requested a waiver request from the stormwater flooding standard. Lauren Swett, in her review of the stormwater management plan recommends approving the waiver request in accordance with Maine DEP Chapter 500 standards and Section 5 of the City of Portland's Technical Manual, which state that the Flooding Standard can be waived for projects that discharge directly to a large body of water like a river or the ocean. She also has requested additional clarification on stormwater design and compliance with the General and Redevelopment Standards in accordance with Maine DEP Chapter 500 stormwater management standards and Section 5 of the City of Portland's Technical Manual, and recommends these items be addressed as conditions of approval:

- *The Applicant's plans should clearly show the surface areas that are discharging to stormwater treatment systems. Any exposed parking surfaces within the structure should be identified, and grading provided to show how stormwater from this exposed parking deck will exit the site.*
- *Based on the information provided, the project will meet the City's thresholds requiring treatment for new impervious area (greater than 1,000 SF) as well as for redeveloped impervious area (non-roof greater than 5,000 SF). Total areas have been identified in the narrative, but the treated areas should be delineated on the plan or in a separate stormwater figure.*
- *It is our understanding that the proposed Fabco Storm Basin water quality cartridge system is not an approved proprietary Maine DEP stormwater treatment system. The Applicant should review DEP approved stormwater treatment options, or should provide justification as to why the City should accept the proposed system, keeping in mind that treatment/storage of the channel protection volume should be provided.*
- *Final acceptance by DPW of the proposed utility connections in the road, as well as confirmation of utility ability to serve, are required as conditions of approval.*

3. Public Infrastructure and Community Safety Standards

a. *Consistency with Related Master Plans*
The project is generally deemed consistent with related master plans.

b. *Public Safety and Fire Prevention*
The site provides access from Fore Street for emergency vehicles and may eventually from Thames Street, as well. The Fire Department has reviewed the application and finds access to the site acceptable for their needs.

c. *Availability and Capacity of Public Utilities*
Ability to serve letters from Unitil and Spectrum have been received, and evidence of capacity to serve from PWD and CMP are required before final approval. The application proposes underground electric service and utilizing existing poles along Fore Street.

Efforts are underway to develop an electrical masterplan for the eastern waterfront to assess existing conditions, needs and costs, and to coordinate infrastructure improvements. A condition of approval is proposed to for 100 Fore Street to participate in that effort to underground overhead utilities within ten months following approval.

4. Site Design Standards

a. *Massing, Ventilation, and Wind Impact*
The bulk, location, or height of the proposed buildings are not likely to result in health or safety problems from a reduction in ventilation to abutting structures.

b. *Shadows*
The project is not anticipated to result in shadows on publicly accessible open space.

c. *Snow and Ice Loading*
The project is not anticipated to result in snow or ice accumulation on public ways or adjacent properties. The applicant has provided additional information on snow storage and removal. Space for snow storage on-site is limited. The applicant proposes to *contract for snow removal services to include the site and P2 parking deck. It is expected that snow removal for that portion of the P2 deck exposed to snowfall will involve small skid steers.* Small areas of snow storage are indicated on the site plan, one of which is an area with proposed landscaping. Final plans will ensure that snow storage areas don't negatively impact the viability of plantings.

d. *View Corridors*
The site design standard for view corridors references not obstructing public views identified in the *Downtown Vision View Corridor Protection Plan*. This project meets this standard, as it is not in the vicinity of any of the downtown view protection corridors. The project is in the B-6 Height Overlay, which includes provisions for maintaining areas for future connections between Thames Street and Fore Street, which have the effect of protecting views from public ways along these corridors.

e. *Historic Resources*
The site was within 100 feet of a portion of local historic district at 58 Fore Street. However, the owners of 58 Fore Street are in the process of seeking authorization to move the building that placed the historic district within this radius. 100 Fore Street does not require an assessment by the Historic Preservation Program for its compatibility with the Portland Company Local Historic District.

f. *Exterior Lighting*
An exterior lighting plan and fixture details have been submitted. The application indicates Dark Sky approved fixtures, lighting controls to control light spill on the open parking deck, fixtures that can be programmed with schedules for off-hour light reduction, and indicates maximum lighting levels below City maximums. Pole mount fixtures on perimeter of open parking deck utilize back light control optic to reduce light spill. Light pollution concerns are raised in the Design Review memo (Attachment 3), in reference to the abundance of curtain wall incorporated into the building design. This aspect of lighting impacts of the site should be further addressed in final designs.

g. *Noise and Vibration*
The application indicates that HVAC venting will be directed through building roof mounted units or on

the ground adjacent to the building, and HVAC specifications have been submitted. The application indicates the intended location on the upper roof, toward the center of the building. Screening specifications are provided.

h. Signage and Wayfinding

The application requests that approval of commercial signage for the project be subject to a condition of approval.

i. Zoning-Related Design Standards

Design Standards for the B-6 state that development in the zones *shall be designed to support the development of dense, mixed-use neighborhoods with attractive, safe and convenient street level pedestrian environments as demonstrated by compliance with all applicable design standards listed in the Design Manual* (14-526(d).9). It goes on to state that monolithic massing should be avoided, site permeability encouraged, and that larger buildings are concerned, attention given to horizontal and vertical massing. The B-6 is reviewed under the design guidelines for the Eastern Waterfront.

The project's design team has been responsive to Planning Board and Planning staff feedback and the project has undergone substantive building and site design changes since initial submission. Caitlin Cameron, Urban Designer, has included a final design memo for the project (Attachment 3), which indicates that many of the prior issues raised have been addressed, and also identifies some outstanding items. A condition of approval for final building and site design is recommended.



Figure 8, Entry, Fore Street Connector (12-17-2018)

XIII. CONDITIONAL USE

Structured parking garage is a conditional use in the B-6 zone (14-270(a).2.b), subject to conditional use standards. General conditional use standards (14-474.(c).2) include a demonstration that the proposed

use will not have substantially greater negative impacts than would normally occur from surrounding uses or other allowable uses in the same zoning district; the volume and type of traffic and hours would not be substantially greater than would occur for a permitted use; the proposed use won't create unsanitary or harmful conditions by reason of noise, glare, dust, sewage disposal, emissions to the air, odor, lighting, or litter; and the design and operation of the proposed use, including but not limited to landscaping, screening, signs, loading, deliveries, trash or waste generation, arrangement of structures, and materials storage will not have a substantially greater effect/impact on surrounding properties than those associated with surrounding uses or other allowable uses in the zone.

Standards specific to this use in the B-6 zone include a requirement for the incorporation of first floor retail space or other active mixed use (other than parking) along all street frontages. The section does not indicate whether the retail use must be fully continuous across the entire frontage, but since much of the Fore Street frontage is dedicated to the planting/seating/sidewalk area between the retail spaces, the applicant has requested a waiver under this section to ensure they are meeting the full intent of the ordinance. The standard requires that one of several criteria be met to qualify for the waiver, including:

a. The steepness of grade or the character of the adjacent street will not support retail or first-floor mixed use in the foreseeable future.
b. That the first floor of the garage is set back a minimum of 35 feet from the street right of way and its design does not provide an impediment for development of such space for mixed use in the future and the space between the garage and the street not be used for surface parking.
c. Where a market for first floor mixed uses currently does not exist, the Planning Board may grant a waiver of this condition, provided that the structure of the garage is designed to accommodate retail and or mixed uses in the future. The minimum dimensions for this space is 20 feet in horizontal depth and nine feet of potential floor to ceiling clearance.

In addition, all waiver requests under this section must include architecture that enhances the pedestrian experience and disguises the parking use to the extent possible. Staff recommends granting the waiver based on C. and granting the conditional use.

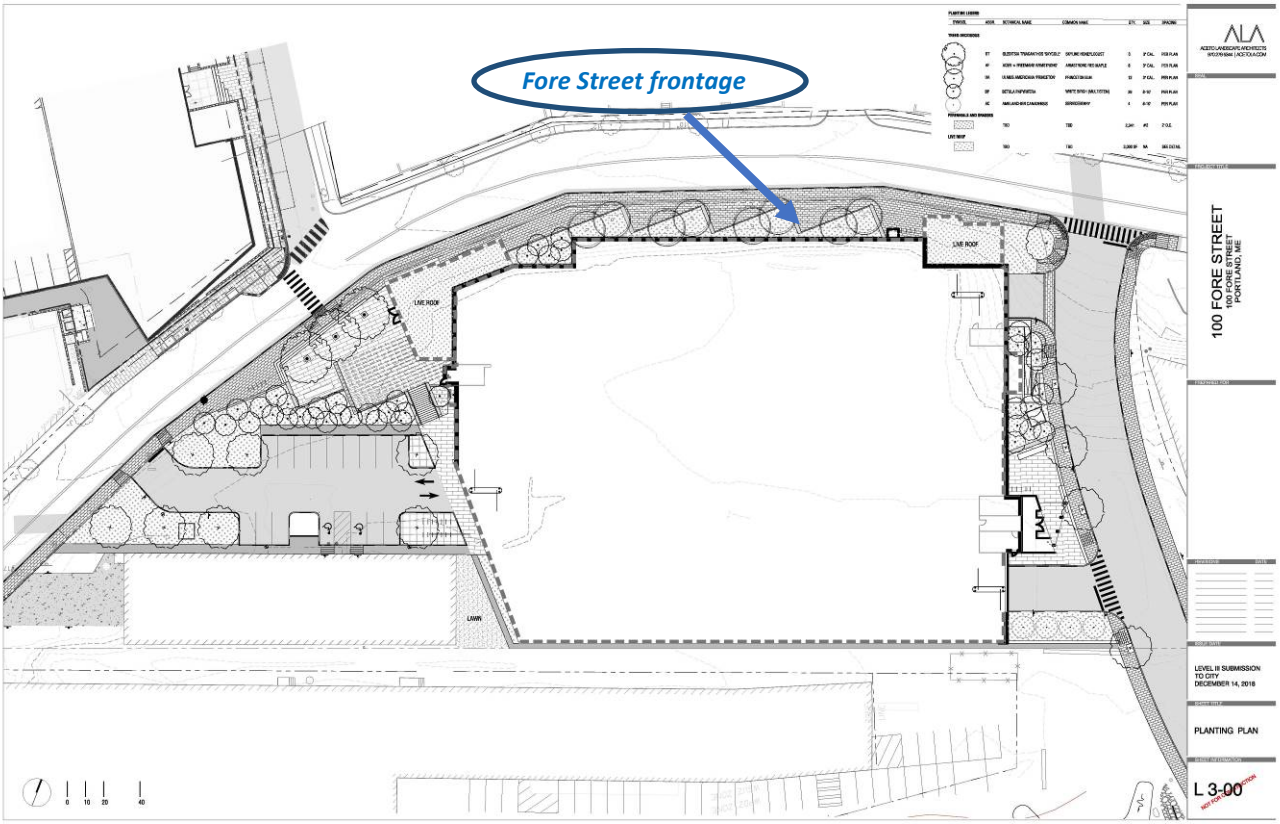

Figure 9, Fore Street frontage

XI. STAFF RECOMMENDATION

Planning Division staff recommends that the Planning Board approve the proposed parking garage, office, and retail space and associated site improvements at 100 Fore Street subject to the proposed motion and conditions of approval listed below.

XII. PROPOSED MOTIONS FOR THE BOARD TO CONSIDER

A. CONDITIONAL USE

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board report for the public hearing on January 8, 2019 for application 358-2018 relevant to Portland's technical and design standards and other regulations; and the testimony presented at the Planning Board hearing the Planning Board finds that the plan **is/is not** in conformance with the general conditional use standards of the land use code, and the conditional use standards for structured parking garages in the B-6 zone.

B. WAIVERS

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board report for the public hearing on January 8, 2019 for application 358-2018 relevant to Portland's technical and design standards and other regulations; and the testimony presented at the Planning Board hearing:

1. The Planning Board **finds/does not find**, based upon the consulting transportation engineer's review, that extraordinary conditions exist or undue hardship may result from strict compliance with the *Technical Manual* standard (Section 1.7.2.7) which establishes a minimum spacing for driveways from intersections, that substantial justice and the public interest are secured with the variation in this standard, and that the variation is consistent with the intent of the ordinance. The Planning Board **waives/does not waive** the *Technical Manual* standard (*Section 1.7.2.7*) to allow a driveway separation of 33 feet for entrance P2 from Fore Street.

2. The Planning Board **finds/does not find**, based upon the consulting civil engineer's review, that extraordinary conditions exist or undue hardship may result from strict compliance with the *Technical Manual* flooding standard (Technical Manual Section 5, Portland Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management), that substantial justice and the public interest are secured with the variation in this standard, and that the variation is consistent with the intent of the ordinance which states projects that discharge directly to a large body of water like a river or the ocean may be exempted. The Planning Board **waives/does not waive** the *Technical Manual* requirement (Technical Manual Section 5, Portland Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management *7*) to waiver the flooding standard requirement.

3. The Planning Board **finds/does not find** that extraordinary conditions exist or undue hardship may result from strict compliance with the Land Use Code Section 14-270(b).i which requires that structured parking incorporate first floor retail space along the ground floor of the building frontage, that substantial justice and the public interest are secured with the variation in this standard, and that the variation is consistent with the intent of the ordinance which states projects that projects shall incorporate active uses, screen parking, and reserve space not dedicated to active uses for future conversion. The Planning Board **waives/does not waive** the Land Use Code Section 14-270(b).i regarding first floor retail space in structured parking garages.

C. DEVELOPMENT REVIEW

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on January 8, 2019 for application 358-2018 relevant to the site plan regulations and *Technical Manual* standards; and the testimony presented at the Planning Board hearing, the Planning Board finds that the plan **is/is not** in conformance with the site plan standards of the land use code, subject to the following conditions of approval, which must be met as follows:

Prior to building permit application:

1. The applicant shall submit final, revised landscape plans addressing planting species and location comments for review and approval by the City Arborist and the Planning Authority.
2. Applicant shall submit final architectural drawings, revised per Planning Board discussion and staff comment.
3. Final, revised plans shall demonstrate that reflect review comments.

Prior to the issuance of a building permit:

4. The applicant shall provide a revised Construction Management Plan addressing comments for review by the Department of Public Works and the Planning Authority.
5. The applicant shall demonstrate that the final plan set includes sidewalks, driveways and curb ramps that meet ADA and City standards.
6. All easements and licenses related to pubic pedestrian access easement in the areas of the sidewalk that not in the public right-of-way shall be finalized to the satisfaction of the Planning Authority, Department of Public Works, and Corporation Counsel.
7. A pedestrian access easement across 100 Fore Street, located in the area of Mountfort Street Extension, as shown on the B-6 Height Overlay, shall be finalized to the satisfaction of the Planning Authority, Department of Public Works, and Corporation Counsel.
8. A revised stormwater management plan shall be submitted for review and approval by the Planning Authority. Revisions should address any exposed parking surfaces within the structure; additional grading detail to show how stormwater from the exposed parking deck will exit the site; delineation of treated areas; and justification of the Fabco Storm Basin water quality cartridge system or substitution of it with an approved proprietary Maine DEP stormwater treatment system, with treatment/storage of the channel protection volume included.
9. Final acceptance by Department of Public Works of the proposed utility connections in the road, as well as confirmation of utility ability to serve, are required. Any utility modifications post-approval shall be submitted to the Department of Public Works and Planning Authority for review and approval.

Prior to the issuance of a certificate of occupancy:

10. The applicant shall construct the portion of the Fore Street Connector road on the applicant's property as shown on the final approved site plan, for potential future acceptance by the City of Portland as a public way.
11. The applicant shall submit a signage plan for review and approval by the Planning Authority prior to applying for sign permits with the Department of Permitting and Inspections.
12. The applicant shall submit a parking management plan to the Planning Authority for review and approval.
13. The applicant shall submit a revised Transportation Demand Management Plan to the Planning Authority for review and approval.
14. Applicant shall receive approval under and be subject to the requirements of the Eastern Waterfront Transportation District Traffic Movement Permit.
15. Parking garage shall include up to 20 municipal parking space, primarily for the use of the City of Portland Police Department at no cost to the City for five years. These spaces are to offset the loss of municipal parking in the area due to recent development projects.
16. The applicant shall participate in the eastern waterfront electrical masterplan within ten months following approval.

Post-Occupancy:

17. Monitoring, jointly undertaken by City staff and the applicant's traffic engineer, to be jointly undertaken every 6 months up to and following full occupancy for a period of up to two

years following full occupancy of the building and completed construction of the Fore Street Connector. In the event of safety or operational concerns following monitoring, changes to the P-2 entrance and exit movements onto the Fore Street connector may be required, including prohibition of left-turn movements. Any revisions to the approved design shall be reviewed and approved by the Planning Authority. (*If required after final P2 driveway entrance review*).

XIII. ATTACHMENTS

Planning Board Report Attachments

1. Civil Engineer Review (memo from Lauren Swett 1/3/2019)
2. Traffic Engineer review (memo from Thomas Errico 1/4/2019)
3. Urban Design review (memo from Caitlin Cameron 1/3/2019)
4. City Arborist review (memo from Jeff Tarling 1/3/2019)
5. Senior Planner TDM comments (email from Christine Grimando 1/3/2019)

Applicant's Submittal

A. Level III Site Plan Application
B. Cover Letter
C. Project Description
D. Zoning Assessment
E. Right, Title & Interest
F. Financial Capacity
G. Technical Capability
H. Waiver Requests
I. Transportation
J. Environmental and Stormwater
K. Public Infrastructure & Safety
L. Site Design
M. Environmental & Landscape Features
N. Construction Management
O. Architectural Narrative
P. Stormwater Report
Q. Neighborhood Meeting Certification
R. Response Letter 1
S. Response Letter 2
T. Arch Narrative_12.14.18
U. 100 Fore Street TDM Plan 181217
V. Traffic Impact Study
W. Parking analysis

Plans

Plan 1 Cover Sheet
Plan 2 General Notes
Plan 3 Topographic Survey
Plan 4 Existing Conditions and Demolition
Plan 5 Site Layout Plan
Plan 6 Grading, Drainage, Erosion Control

Plan 7 Grading Plan
Plan 9 Site Cross Section 1
Plan 9 Site Cross Section 2
Plan 10 Site Cross Section 3
Plan 11 Access Road Profile
Plan 12 Access Road Plan and Profile
Plan 13 Miscellaneous Details
Plan 14 Utility Plan
Plan 15 Landscape Site Sidewalk Details
Plan 16 Stormdrain and Utility Details
Plan 17 Pavement Erosion Control Details
Plan 18 Miscellaneous Utility Details
Plan 19 Miscellaneous Details
Plan 20 Layout & Materials Plan
Plan 21 Landscape Plan
Plan 22 Site Details
Plan 23 Site Details
Plan 24 Site Details
Plan 25 Planting Details
Plan 26 Building Elevations
Plan 27 Building Elevations
Plan 28 Building Elevations
Plan 29 Plaza and Grading Blowup
Plan 30 Sidewalk Site and Grading Blowup
Plan 31 Access Site and Grading Blowup
Plan 32 Access Site and Grading Blowup2
Plan 33 Storm Drain Profile
Plan 34 Ground Level Parking
Plan 35 Elevated Parking 1
Plan 36 Elevated Parking 2
Plan 37 Office 1
Plan 38 Office 2
Plan 39 Lighting 0
Plan 40 Lighting 1
Plan 41 Lighting 2
Plan 42 Site Lighting
Plan 43 c-4.5 levels_1and 2 Ramps
Plan 44 c-4.5_level_2&level_3
Plan 45 c-4.6 ground level profile
Plan 46 exhibit_1_auto_turn_fire_plan
Plan 47 Existing Hamilton Marine with WEX windows
Plan 48 100 Fore Hamilton
Plan 48 A0.00 _HAMILTON MARINE PLAN
Plan 49 100 Fore Upper Fore
Plan 49 A0.02 - HAMILTON MARINE ELEVATIONS
Plan 50 100 Fore Upper Fore Evening
Plan 51 100 Fore Thames

Plan 52 100 Fore Thames w future building
Plan 53 100 Fore Screen
Plan 54 100 Fore Entry Evening
Plan 55 100 Fore Entry
Plan 56 100 Fore Fore Street
Plan 57 100 Fore Lower Fore Plaza
Plan 58 100 Fore Lower Fore
Plan 59 c-6.5_miscellaneous_details2

Public Comment
PC1 Manter (10-23-2018)
PC2 Day (10-23-2018)
PC3 Milneal (10-23-2018)
PC4 Snyder (10-30-2018)
PC5 Thayer (11-26-2018)
PC6 Lape (11-26-2018)

Att. 1

Portland Maine | Yes. Google's good here.

Christine Grimando <cdg@portlandmaine.gov>

100 Fore Street

14 messages

Lauren Swett <lswett@woodardcurran.com> Thu, Jan 3, 2019 at 7:57 AM
To: Christine Grimando <cdg@portlandmaine.gov>

Hi Christine,

I just tried to upload a few comments for 100 Fore Street, but I'm not sure if it worked. I added three recommendations, hit save, and Energov seemed to crash. Now all I get is the "Can't reach this page" note when I try to go back to the website. I was able to add and save comments to another project, but maybe one per day is the limit…

So, they may be in there, and they may not. Just in case, I'll paste them below:

- I am in agreement with the Applicant's request for a waiver from the stormwater Flooding Standard. In accordance with Maine DEP Chapter 500 standards and Section 5 of the City of Portland's Technical Manual, the Flooding Standard can be waived for projects that discharge directly to a large body of water like a river or the ocean.
- Additional clarification on stormwater design and compliance with the General and Redevelopment Standards in accordance with Maine DEP Chapter 500 stormwater management standards and Section 5 of the City of Portland's Technical Manual is required as a condition of approval. The following comments should be addressed:
  - The Applicant's plans should clearly show the surface areas that are discharging to stormwater treatment systems. Any exposed parking surfaces within the structure should be identified, and grading provided to show how stormwater from this exposed parking deck will exit the site.
  - Based on the information provided, the project will meet the City's thresholds requiring treatment for new impervious area (greater than 1,000 SF) as well as for redeveloped impervious area (non-roof greater than 5,000 SF). Total areas have been identified in the narrative, but the treated areas should be delineated on the plan or in a separate stormwater figure.
  - It is our understanding that the proposed Fabco Storm Basin water quality cartridge system is not an approved proprietary Maine DEP stormwater treatment system. The Applicant should review DEP approved stormwater treatment options, or should provide justification as to why the City should accept the proposed system, keeping in mind that treatment/storage of the channel protection volume should be provided.
- We understand that the Applicant has been coordinating the appropriate connection of stormwater and sewer from the garage structure to the proposed infrastructure in the adjacent roadway. Final acceptance by DPW of the proposed utility connections in the road, as well as confirmation of utility ability to serve, are required as conditions of approval.

There are two relatively broad conditions of approval suggestions that will hopefully be simple for you to add. I called Justin Pellerin yesterday, because I understand he has been talking with Steve about the stormwater/sewer connections, and what can go where. I haven't heard back, so that's why I left the last bullet fairly open.

If there are any questions, let me know.

Thanks,

Lauren

Lauren Swett, P.E.*

Technical Manager

Woodard & Curran

41 Hutchins Drive

Portland, Maine 04102

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(207)219-3591 (cell)

(800)426-4262 (office)

Email: lswett@woodardcurran.com

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M.ASCE

Chair, Leader Training Committee

American Society of Civil Engineers

http://regions.asce.org/leader-training-committee/

Lauren Swett <lswett@woodardcurran.com> Thu, Jan 3, 2019 at 8:22 AM
To: Justin Pellerin <jrp@portlandmaine.gov>
Cc: Bradley Roland <brad@portlandmaine.gov>, "Grimando, Christine" <cdg@portlandmaine.gov>

Hi Justin,

Thanks for giving me a call back this morning. You'll see my comments below, one relative to agreement with the waiver of the Flooding Standard, and the other two are general design/coordination conditions. If you have any questions, or suggestions, let me know.

Thanks!

Lauren

Portland Maine | Yes. Google's good here.

Christine Grimando <cdg@portlandmaine.gov>

100 Fore Street - Final Site Plan Traffic Comments

1 message

Tom Errico <thomas.errico@tylin.com> Fri, Jan 4, 2019 at 12:48 PM
To: Christine Grimando <CDG@portlandmaine.gov>

Hi Christine - The following summarizes final site plan traffic comments as a status update of previous comments.

- The number of driveways to the site seems excessive. I am concerned about corner clearance to the level 2 garage entrance; the provision of a very wide driveway to the Gym Building (and spacing to the abutting driveway); and the angle of the driveway to the Ground level garage.

Status: I continue to be concerned about the number and location of driveways. I would suggest the following:

- **A review of internal garage ramping such that the P2 Driveway can be eliminated. I am concerned about safety conditions at the driveway given limited sight distance, number of vehicles entering and exiting, proximity to Fore Street, and geometric conditions of the garage ramp and the Connector Road.**
- **Close the driveway servicing the dumpsters at the building housing the gym. Relocation or reprograming waste management would be required.**
- **If it is determined that an internal garage P2 Ramp is not feasible, the following actions should be considered.**
  - **Conduct a field monitoring study of the P2 Driveway to be jointly undertaken by City staff and the Applicant's Traffic Engineer every 6 months up to and following full occupancy. If the monitoring study identifies safety/operational problems, the Applicant shall be responsible for implementing turn prohibition(s) such that, at a minimum, left-turn exit movements are prohibited.**

- Information on how each parking level will be managed shall be provided. Given the lack of interior circulation, the parking garage lacks opportunities for optimal sharing of the parking supply.

Status: See prior comment regarding internal garage ramps.

- If Thames Street Extension becomes a City Street, the Applicant should provide information on how the proposed roadway configuration would fit in the future public right-of-way and what would the ultimate full cross-section consist of.

Status: The Applicant has coordinated the design of the street with City staff and the general design is acceptable. The Applicant should document that all sidewalks and ramps meet ADA standards.

- The Thames Street Extension roadway is proposed to be 28-feet wide. On-Street parking is to be prohibited. Determination on the appropriate right-of-way should be performed.

Status: The street cross-section is acceptable with on-street parking permitted on the east side of the street.

- The Applicant should provide details on how will truck deliveries be accommodated.

Status: Specific details on truck deliveries shall be noted on the site plan.

- Crosswalks should be provided across Fore Street at the Thames Street Extension intersection.

Status: The Plans shall be revised to include the noted crosswalk. This is subject to review and approval by City staff.

- The Applicant shall provide width dimensions for all driveways.

Status: The Plans have been revised and I have no further comment.

- The southerly Fore Street curb alignment has sharp angle points. Adjustments may make sense and review with DPW staff is suggested.

Status: This item is outstanding and subject to final direction from DPW.

- The Applicant shall provide a detailed parking demand/supply analysis.

Status: The Applicant has provided the requested analysis. While I do not approve the adjustment methods used in estimating parking demand, sufficient parking supply will be provided for the proposed land uses and therefore I find parking conditions to be acceptable.

Additional Comments

- **The proposed new utility pole near the Ground Level Driveway should be relocated to an area with a wider sidewalk for increased lateral clearance.**
- **The grade of the Ground Level Driveway is approximately 8% approaching Fore Street. I am concerned about safety conditions during winter time periods. The Applicant shall provide strategies/methods for minimizing slippery surface conditions.**
- **Similar to the Ground Level Driveway, strategies/methods for minimizing slippery winter conditions on the P2 Driveway (12.6% grade approaching the Connector Road) shall be identified.**
- **The 8% grade on the Fore Street Connector approach to Fore Street does not meet City standards. The Applicant shall revise the design to meet City standards.**
- **The sidewalk at the southeast corner of the Fore Street and Connector Road intersection is not located within the proposed right-of-way. It is my understanding that the Connector Road right-of-way is being widened and therefore this issue may not be valid.**
- **The P1 Driveway apron shall meet City standards.**

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
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"One Vision, One Company"

Planning and Urban Development Department
Planning Division

Subject: B6 Design Review – 100 Fore Street

Written by: Caitlin Cameron, Urban Designer

Date of Review: Thursday, January 3, 2019

The final review of the proposed garage, office, and retail building at 100 Fore Street was conducted by Caitlin Cameron, Urban Designer, Christine Grimando, Senior Planner, and Shukria Wiar, Planner.

Design Review Criteria:
The Site Plan application is subject to the policies and standards listed below:

- Eastern Waterfront Master Plan - *Design Guidelines for the Eastern Waterfront*
- City of Portland Design Manual – *(g) EWPZ Eastern Waterfront Port Zone and B6 Eastern Waterfront Mixed Use Zone*

Staff Review Comments:
Since the first workshop, in response to the comments to simplify the design and provide more hierarchy, the applicant made revisions to the material treatments, roof lines, and some of the massing of the towers but there are no changes to the overall massing or internal organization of the project. The project uses the strategy of two retail spaces that bookend a landscape plaza on Fore Street. This means the office and garage entrances and bulk of the office building are away from the street, interior to the block. The primary office entrance is located mid-block on the new connector road leaving Fore Street interface primarily residential and plaza spaces.

Eastern Waterfront design standards: All major and minor development reviewed under the provisions of the eastern waterfront zones shall be designed to support the development of this urban neighborhood as a dense, mixed-use, pedestrian friendly neighborhood.

Contextual Design
The site is below the Munjoy South development and the residential Munjoy Hill neighborhood. The site is adjacent to the eastern waterfront and Portland Company site which currently includes a mix of transportation, industrial, and tourism uses and building typologies but is yet to be fully developed. And to the west is the India Street neighborhood with a mix of historic and contemporary mixed-use, hotel, and residential buildings of varying heights and scales. Most immediately across the street will be the recently approved office building at the Shipyard site with seven stories and a glass curtain wall and brick façade.

Recent projects have been strongly oriented towards the water and create a design character using high levels of fenestration and curtain wall. Successful design in this area will provide respectful transitions between and recognition of the patterns found within these varying contexts. However, there is

latitude to define a new and contemporary pattern of development and possibly a waterfront facing approach. The 100 Fore design proposes to continue that emerging trend for contemporary development oriented towards the waterfront.

- Defining Context: The eastern waterfront is being defined by new mid-rise buildings of 4-7 stories, often with large footprints, and contemporary styles. Though this site is directly downhill from the Munjoy South development, that development is not considered to be appropriate urban residential design and is not drawn from as a context driver. Staff view this as a transitional site but Fore Street context does already include long, mid-rise buildings with active frontage**. The building is commercial mixed-use and should reflect that use in its character and scale. Staff suggest that the building relationship to Fore Street is critical to the urban design approach of this project. The building should continue to build up the urban street wall and pattern of development established by previous developments. Consideration should also be given to what is proposed at the Portland Company adjacent – a four-story mixed-use office building with a contemporary design.**
- Contextual Characteristics: Though the scale, use, and style of the surrounding buildings varies, the traditional context is defined by buildings with clear orientation, simple material palettes, strong street walls, and simple forms. **Previously, staff commented that the project lacks cohesiveness, a clear orientation and design concept. Staff recommended revisions that simplify the design in these ways, consciously design the building interface with Fore Street, and provide clear hierarchy and legibility.**
- Relationship to the Street: The relationship to the street is another way in which buildings relate to context. The site complexities and zoning dimensional standards cause the massing/height of this building to be pushed away from the street. The result is a one-story building on Fore Street. **Given that the zoning does not allow more of the office building massing to be on Fore Street**, the design of the components (retail, plaza, garage wall) facing Fore Street are very important to activate and provide an appropriate scale and street wall edge. More specifically, as an urban, mixed-use building, the street façade calls for appropriate height, articulation, activity, and orientation of storefronts and entrances.

  Given the site and zoning constraints, staff agree with the design decision to create a plaza node at the west corner of the building. The curve of Fore Street creates a strong sight line towards this corner of the building – **the design concept, massing, and orientation continue to emphasize this corner appropriately.** However, this circulation tower and building entrance are not considered the main entrance to the garage or office building creating some of the confused hierarchy and legibility to the building design. Staff believe new buildings should create a Fore Street context that conveys an urban, mixed-use, pedestrian-friendly street and provides an orientation to the street.

Building Composition (placement, orientation, massing, articulation, and materials)

The design standards emphasize density, mixed-uses, and pedestrian friendliness.

The building includes a two-story parking plinth, office uses on the upper floors with circulation towers as anchoring elements, and retail spaces at the ground level at Fore Street. The building smartly uses the grade change to bury the parking. The design approach to Fore Street establishes a new street wall with a one-story garage and liner retail buildings. The building includes a plaza at the western corner with concentration of retail, office/garage egress, landscape, and plaza space. **The material palette was revised to be more simple** – predominantly curtain wall for the office, circulation towers are expressed in solid materials to anchor the floating glass box of the office spaces. A perforated metal wall is proposed as the screen between the garage and Fore Street with plaza and landscape treatments to soften that edge. The towers at the west plaza were also revised to bring more emphasis to this corner and urban space.

- Orientation: The building has multiple orientations - the office building massing is placed downhill away from the street with an orientation to the connector street and the waterfront. But the street edge is an important component to meet the design goals of an urban, mixed-use, and dense urban environment. Staff agree that creating a strong and active street wall is appropriate for this urban site. The entry plaza at the western corner also seems a logical node around which to orient the building forms and massing given the grades, sight lines, and curved street frontage. All of these considerations cause the building to have multiple orientations. Given that condition, the hierarchy and legibility of the different uses becomes critical (see the comments below). The retail spaces on Fore Street need revision to have a clearer orientation and strengthen that street presence (whether to the plaza spaces or Fore Street). The principal entrance for the office building should be emphasized and clearly visible from multiple vantages. **Staff believe this has been achieved with the most recent revisions.**
- Hierarchy and Massing: The project places the tallest masses away from the street, interior to the site. There is a significant amount of massing variation between the garage mass, the office plates which move in and out, and the circulation towers. Given the complexity of the massing, it is important to use other design elements to give hierarchy and contextuality to the project. Previous comments asked for simplification and a clear organizing and design concept. The simplification of the materials and use of the vertical tower elements help to do this. Areas of revision include the height and design of the Fore Street interface, and the hierarchy of the primary building entrance.
- Entrances: The principal office entrance is on the new connector road. The revised design is uses a tower with curtain wall with an angled wall to emphasize this entrance given its location on a side street, mid block. **Additional emphasis is added with the trellis element which provides human scale, indicates the entrance, and also provides comfort and definition to the plaza space. The retaining wall also defines and protects that plaza space.** The canted wall makes sense as a design move to orient this entrance tower towards Fore Street and also allow this building component to be visible from Thames Street.
- Retail: The retail design is was revised to use best practices of storefront design with grounded base, thoughtful entrance placement, and more directional orientation to legibly convey the entrances and uses. The entrances for the retail spaces are more visible from the pedestrian approaches using canopies and the entry orientation helps activate Fore Street. The height of the retail bays was revised to create more height with parapets, green wall, or similar. The material palette was also revised based on Planning Board and staff comment to differentiate the retail use from the office use.
- Materials: Many of the new buildings in this immediate context propose high levels of fenestration and curtain walls. Staff are not opposed to the use of curtain wall here but there is concern about light pollution and drawn shades that the applicant will need to address. The material palette and placement was simplified and staff agree that these changes improve the contextuality, legibility, hierarchy, and overall building design.

Pedestrian Environment

Fore Street: Fore Street is a challenging building/pedestrian environment interface given its curves and grade changes; convex street walls are not conducive to friendly pedestrian environments. This long building façade is also north-facing. The convex curve in the road and the design of the parking structure result in left over space that is not suitable for retail. **Staff support the proposal to locate**

retail spaces at the two corners of the building on Fore Street – these appear to be viable spaces and are the most visible locations helping with the **activation of the street**. The two end retail spaces appropriately hold the corners of the building and help define the urban space. It is also appropriate to square the garage wall to the street and create a space between the garage and the sidewalk.
Staff have the following questions or comments:

- Plaza Design: The plaza space is north-facing and narrow. The back face of this space is a parking garage. These challenges should be carefully considered in trying to make an active space. The inactive edge is softened and activated with the planters, opportunities for seating, street trees, and a screen wall with visual interest. **The retail uses, seating walls, and bicycle parking will help activate here** and the material treatment of the wall is an important factor to making the space **visually interesting and comfortable.** Consider:
  - The perforated screen wall is a creative solution to screen the garage and provide visual interest. The idea appears to be most successful at night. Samples or images of this material should be provided.
- Retail: The proposed entrance locations for the retail have been clarified and better reflect the sight lines and circulation patterns. These are now highlighted with a canopy element. The front facades are better defined with the placement of the storefront and the articulation/canopy elements. The material palette was revised to differ from the office building to help differentiate the office from retail uses and to bring legibility to building entrances and retail uses on the streetscape.

  Landscape: Landscape is appropriately used to soften the plazas space and provide screening in other locations. The landscape and sidewalk design at Fore Street and the connector road were revised to align with pedestrian circulation patterns. The planter area was scaled back so as to not block the pedestrian desire line from the crosswalk across Fore Street down the connector road. All planters should have a defined edge and serve as a grade transition on the side of the retail space – granite or concrete are appropriate for those curb and planter walls. The street trees and light layouts were revised appropriately to reduce sight line and pedestrian circulation conflicts.

  West Plaza: Staff support the design direction that places a plaza on the western edge of the site. Since the first workshop, the applicant clarified that this plaza is not the primary entrance to the garage or office building. The curve of the road, the grades, and the building program (retail and office entrance) make this location a logical node. This point is prominent and visible as one approaches on Fore Street. This design approach further helps mediate the grade changes and to bury and screen the lower level of surface parking. The plaza space should be comfortable and functional and the building design should clearly convey entrances – staff do not support a design that creates rigid paths and creates barriers (physical and visual) into the space from the sidewalk. Design should include:

  - Seating opportunities, including under shade
  - Flexible design that accommodates multiple desire lines through the space
  - Bicycle parking convenient to retail and building entrances
  - Street trees

Portland Maine | Yes. Google's good here.

Christine Grimando <cdg@portlandmaine.gov>

100 Fore update

Jeff Tarling <jst@portlandmaine.gov> Thu, Jan 3, 2019 at 2:56 PM
To: Christine Grimando <cdg@portlandmaine.gov>

Hi Christine -

Concept wise and the plan view of the trees & landscape plantings for the proposed 100 Fore Street look good. Some of the details conditions we would like to see for the final plan include:

a) Include the tree and landscape symbols on the actual plan, shown as ABBR. in the plan key it was challenging to match up the plant on the plan itself.

b) Street trees - The 'Princeton' American Elm might be too big a tree type to include along the new access road. We would recommend 'Street-keeper' Honeylocust 2" caliper due to its upright habit and salt tolerance. Street tree planting sites and tree pit - on the new access road off Fore Street we would recommend reducing the number of trees by 1 from 5 to 4 removing the closest tree to the first garage entrance where the grove of trees are located on the project side of the sidewalk. The other two trees would slide slightly towards the second entrance. Street tree opening should be rectangular shape approximately 7' long by x wide depending on the walkable sidewalk space, knowing we want to maintain a 5' wide walkway if possible. Note - we would want to match tree planter details to others nearby along Themes & Hancock Street to the similar conditions with the 100 Fore Street project. Some of these have raised granite where space allows and others have tree grates.

c) Tree & landscape - root zones, we would encourage the final plan to show the actual planting details for both the street trees and the 3 trees in the plaza near Fore Street. It was hard to tell from the landscape plan if structural soil or a type of vaulting system was being used. The groves of birch trees would benefit from ample soil volume using a compost / soil mix vs the typical veneer of top soil. The mix could include 'Casella Superhumus or their Superpeat' product.

https://www.casella.com/sites/default/files/2018-05/Superhumus%20%202018.pdf
https://www.casella.com/products/earthlife-products/compost/super-peat

Tree & landscape planting specifications - Updated planting specs can be found on the ISA, (International Society of Arboriculture) web site where they have really good details for planting in compacted soils for example. The updated specs are needed for the future landscape contractor to install the plants correctly. See:

https://wwv.isa-arbor.com/education/onlineresources/cadplanningspecifications#Planting

d) Tree & landscape plant types - The tree planting along Fore Street are vitally important to the project. The proposed 'Armstrong' Red Maple is a favorable tree type that would work along Fore Street, similar Red Maple cultivar, 'Bowhall' is slightly wider and might be preferred, both are available in trade at similar unit pricing.
Birch grove - 'Renaissance Reflection' White Birch has proven to be a hardier type of White Birch that would give the same effect. 'Heritage' River Birch might be a alternative species type knowing the possible sensitivity of White Birch in dry urban conditions.

e) Misc. landscape topics - recommend a landscape treatment for the parking lot space near the handicap parking. The 'perennials & grasses' plant types and numbers would be a condition, including the type, size and number of plants.

Overall, with refining and tweaking the existing plan the overall landscape plan is acceptible with the suggestions mentioned.

Thanks,

Jeff
Jeff Tarling
City Arborist - City of Portland Maine
Parks, Recreation & Facilities Department
Forestry & Horticulture
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Portland Maine | Yes. Google's good here.

Christine Grimando <cdg@portlandmaine.gov>

TDM comments

2 messages

Christine Grimando <cdg@portlandmaine.gov> Thu, Jan 3, 2019 at 4:39 PM
To: Sarah Cushman <sarah@sarahcushman.com>

Hi Sarah,

Some clarifying questions and comments on the 100 Fore Street TDM below and annotations attached. Please let me know if you have any follow-up questions or concerns. Realizing the window for revisions is short going into the public hearing, so anything you can incorporate into the document before then we can cross off this list, and anything remaining we'll include as an item to finalize as part of a condition of approval.

Thanks!

Christine

- On p. 1 the plan presents the trip reduction and parking reduction targets in terms of peak hour vehicle trips and parking demand 'per capita.' The unit of measure should actually be total peak hour vehicle trips/parking demand (on an average day), not trips per capita, correct?
- Elsewhere in the plan (i.e. p. 7), the trip target is expressed in general terms, not as vehicular trips. Can this be clarified?
- Similarly, the multi-modal target should be clarified. On p. 1, it is referred to as a '5% multi-modal rate increase.' On p. 8 it is framed as 20% of employee and visitor trips (morning? afternoon? total? annual? An additional 7.2% of employees/visitors making multi-modal trips on an average day (beyond the initial estimate)?). Page 1 aside, it may be easiest to report on the total multi-modal mode share target (i.e. 20%).
- The parking usage survey should include documentation of usage in each parking location over a given period of time.
- The annual report should include data directly relating to plan targets.
- Methods for calculating progress toward trip reduction targets should be clear, and should be based on actual site data, including a combination of counts (vehicles entering and exiting) and employee survey information.
- As discussed at Wednesday's meeting, the TDM should be clear that reporting will include an overview of the subsequent use of cashed out spaces and what modes employees who are not using a space have opted for.

Christine Grimando, AICP
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ReCode Portland
Portland's Plan 2030

100 Fore Street TDM Plan 1-3-2019 comments.pdf
2051K

Christine Grimando <cdg@portlandmaine.gov> Thu, Jan 3, 2019 at 4:53 PM
To: Helen Donaldson <hcd@portlandmaine.gov>

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ReCode Portland
Portland's Plan 2030

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100 Fore Street TDM Plan 1-3-2019 comments.pdf
2051K

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

LEVEL II and LEVEL III APPLICATION SUBMISSION CHECKLIST

Please submit each document as a separate PDF file.
Please confirm by electronically checking the boxes to the left

General Application Documents

Checklist	Items to be Provided
Yes NA Plan ✔ ☐ ☐	PROJECT DESCRIPTION • Cover Letter with detailed project description
Yes NA Plan ✔ ☐ ☐	COMPLETED CHECKLIST – LEVEL III APPLICATION
Yes NA Plan ✔ ☐ ☐	RIGHT, TITLE AND INTEREST • Deeds, leases, or purchase and sales agreements
Yes NA Plan ✔ ☐ ☐	EVIDENCE OF STATE OR FEDERAL APPROVALS, if applicable • Permits or letters of non-jurisdiction, if applicable
Yes NA Plan ✔ ☐ ☐	ZONING ASSESSMENT • Table listing required and proposed uses and dimensional standards Zoning Assessment Table
Yes NA Plan ✔ ☐ ✔	EXISTING &/OR PROPOSED EASEMENTS OR COVENANTS, if applicable • Evidence of existing easements and any proposed easements
Yes NA Plan ✔ ☐ ☐	WAIVER REQUESTS • Written request for waiver describing request and reason. Waiver Table
Yes NA Plan ✔ ☐ ☐	FINANCIAL CAPABILITY • Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
Yes NA Plan ✔ ☐ ☐	TECHNICAL CAPABILITY • Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

LEVEL II AND LEVEL III SITE PLAN STANDARDS AND SUBMISSION CHECKLIST

Provide assessment of compliance with standards and include supplemental documentation, as applicable.

Please submit each document as a separate PDF file.

TRANSPORTATION

Check list	Assess/Provide/Document:
Yes NA Plan ✔	**Transportation Analysis- Traffic Impact (14-526 (a) 1)** • Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts • Traffic Impact Study (Technical Manual, Section 1) if applicable
Yes NA Plan ✔ ✔	**Access and Circulation (14-526 (a) 2 a)** • Access and internal circulation, addressing ADA access • Access and egress impacts on traffic flows • Description and use of drive-up features, if applicable
Yes NA Plan ✔ ✔	**Loading and Servicing (14-526 (a) 2 b)** • Loading and servicing needs, route and travel way geometrics for deliveries • Turning templates for delivery vehicles, if applicable
Yes NA Plan ✔ ✔	**Sidewalks (14-526 (a) 2 c)** • Sidewalks and condition along street frontages and internal walkways • Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)
Yes NA Plan ✔	**Public Transit (14-526 (a) 3), if applicable** • Existing available transit services • Proposed site plan design details, such as easement, pad base, and shelter
Yes NA Plan ✔ ✔	**Off-Street Parking: Vehicle & Motorcycle/Scooter) (14-526 (a) 4 a and c)** • Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements • Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan
Yes NA Plan ✔ ✔	**Bicycle Parking (14-526 (a) 4 b)** • Address bicycle parking requirements and identify locations on-site • Construction details for bike racks (Technical Manual, Section 1)
Yes NA Plan ✔ ✔	**Snow Storage (14-526 (a) 4 d)** • Management plan for snow removal and locate snow storage areas on plan
Yes NA Plan ✔	**Traffic Demand Management (TDM) (14-526 (a) 5), if applicable** • Develop TDM with Trip Reduction Targets and Strategies

ENVIRONMENTAL AND LANDSCAPE FEATURES	
Check list	Assess/Provide/Document:
Yes NA Plan ✔ ☐ ✔	**Preservation of Significant Natural Features (14-526 (b) 1), if applicable** • Trees, plants, habitats listed on State or Federal list of endangered or threatened • High and moderate value waterfowl and wading habitat • Aquifers on Casco Bay Islands • Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) • Proposed preservation areas and protection measures • Documentation from environmental consultants, determinations from applicable state agencies
Yes NA Plan ✔ ☐ ✔	**Landscaping and Landscape Preservation (14-526 (b) 2 a)** • Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4) • Protection measures of existing vegetation during construction • Protection measures within Shoreland Zone, if applicable
Yes NA Plan ✔ ☐ ✔	**Site Landscaping (14-526 (b) 2 b)** • Screening and buffering of service areas and between non-residential and residential uses • Planting plans with plant schedule and sizes (Technical Manual, Section 4)
Yes NA Plan ☐ ✔ ☐	**Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable** • Landscaped islands within parking areas (Technical Manual, Section 4)
Yes NA Plan ✔ ☐ ✔	**Street Trees (14-526 (b) 2 b iii)** • Existing Heritage or Feature Trees on site and measures to preserve • Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable

ENVIRONMENTAL AND STORMWATER	
Check list	Assess/Provide/Document:
Yes NA Plan ✔ ☐ ✔	**Water Quality, Stormwater Management and Erosion Control (14-526 (b) 3 a)** • Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable • Erosion control plan and measures • Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable • Subsurface sanitary sewage disposal and groundwater protection

PUBLIC INFRASTRUCTURE AND SAFETY	
Check list	Assess/Provide/Document:
Yes NA Plan ✔	**Consistency with City Master Plans (14-526 (c) 1)** • Identify consistency with master plans • Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes NA Plan ✔ ✔	**Public Safety and Fire Prevention (14-526 (c))** • Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3) • Emergency vehicle access • Address consistency with public safety standards (Technical Manual, Section 3) • Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist
Yes NA Plan ✔ ✔	**Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9)** • Electrical services, including providing underground services • Identify existing and proposed connections for public utilities and required public utility upgrades • Sewer line connections are required, if there is a main within 200 feet • Proposed solid waste management facilities on-site and management for the site • Written evidence of the ability to serve from utility companies, as applicable

SITE DESIGN	
Check list	Assess/Provide/Document:
Yes NA Plan ✔	**Massing, Ventilations and Wind Impact (14-526 (d) 1)** • Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable • Bulk, location or height impacts on adjoining structures • Identify and locate HVAC equipment and venting away from public spaces and residential properties • Identify screening and manufacturing specifications for noise, if applicable
Yes NA Plan ✔	**Shadows (14-526 (d) 2), if applicable** • Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes NA Plan ✔	**Snow and Ice Loading (14-526 (d) 3)** • Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes NA Plan ✔	**View Corridors (14-526 (d) 4), if applicable** • Protection of designated view corridors (Portland Design Manual, Appendix 1)

Yes NA Plan ☐ ✔ ☐	**Historic Resources (14-526 (d) 5), if applicable** • Identify developments within Historic Districts or affecting Designated Landmarks • Certificate of Appropriateness or other evidence • Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required • Address preservation and documentation of Archaeological Resources
Yes NA Plan ✔ ☐ ☐	**Exterior Lighting (14-526 (d) 6)** • Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12) • Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)
Yes NA Plan ✔ ☐ ☐	**Noise and Vibration (14-526 (d) 7)** • Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements
Yes NA Plan ✔ ☐ ☐	**Signage and Wayfinding (14-526 (d) 8), if applicable** • Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff • Proposed commercial and directional signage on site
Yes NA Plan ✔ ☐ ☐	**Zone Related Design Standards (14-526 (d) 5)** • Address Historic Preservation Design Review, if applicable • Address any applicable design review standards by zone • Address submission requirements from Design Manual, page 1, addressing neighborhood context • Description of exterior materials, color, finish, and samples
Construction Management Plan	
Check list	
Yes NA Plan ✔ ☐ ☐	**Construction Management Plan** • Construction Management Document and Plan

Level II and Level III Site Plan Checklist

Please upload the following drawings with the listed details into e-Plan as separate pdfs.

☑ **RECENT BOUNDARY SURVEY** (stamped by Maine Licensed Surveyor)

Must be in compliance with Technical Manual, Section 13

SITE PLAN(s) (stamped by Maine Licensed Engineer) including:

☑ **Existing Conditions**

- Approximate location of structures on abutting property
- Topography
- Locate water courses
- Delineate wetlands
- Zone lines

☑ **Proposed Site Plan**

- Ground floor area, and grade elevations for all buildings

☑ **Access, Circulation, and Parking**

- Streets and intersections adjacent to site , any proposed geometric modifications
- Location, dimensions and materials of all existing and proposed driveways, vehicle, bicycle, & pedestrian access ways with corresponding curb lines
- Engineered specifications/ cross-sections for proposed driveways, sidewalks & paved areas
- Location and dimensions of proposed loading areas
- Existing and proposed transit infrastructure with dimensions/ engineering specifications
- Location of vehicle and bicycle parking with dimensions and engineering specifications

☑ **Site Considerations**

- Identify snow storage areas
- Location of fire hydrants
- Location of solid waste management facilities

☑ **UTILITY PLAN** including:

- Existing utilities on site and within public streets
- Location, sizing, and directional flows of all existing and proposed utilities
- Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- Electric utility infrastructure

☑ **GRADING and DRAINAGE PLAN** including:

- Existing grades and drainage
- Proposed grades
- Proposed stormwater management meeting Technical Manual (Section 5) standards
- Location and proposed alteration of a water course
- Preservation or alteration of wetlands

☑ **EROSION CONTROL**

- Must be in compliance with Technical Manual, Section 5

☑ **LANDSCAPE PLAN** including:

- Existing vegetation to be preserved and preservation measures
- Proposed landscaping and buffers
- Planting schedule

☐ **RECORDING PLAT**, if applicable

- IF SUBDIVISION: Must be in compliance with requirements of Section 14-496 (b)

☑ **ARCHITECTURAL PLANS & RENDERINGS** including:

- Exterior building elevations, color renderings, illustrations of all sides
- Location and dimensions of all existing & proposed HVAC & mechanical equipment, all proposed screening
- Provide context drawings, if applicable (Design Manual, page 1)
- Floor plans

Stantec Consulting Services Inc.
482 Payne Road Scarborough Court, Scarborough ME 04074-8929

October 9, 2018

Ms. Christine Grimando
Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

Subject: Application for Level III Site Plan Application
100 Fore Street
Tax Map 019/Block A/10

Dear Christine:

On behalf of **100 Fore Street, LLC** (Applicant), our office is pleased to provide the uploaded submission materials for a Level III Site Plan Application. This submission package is intended to meet the City's Level III Site Plan Submission requirements as outlined in the Level III Site Plan Checklist as well as Section 14-526 of the Code of Ordinances. This submission was contemplated during the recent Eastern Waterfront Overlay zoning language changes approved by the City Council which were based upon the recommendation of the Portland Planning Board. These changes relate to the measurement of building height, specifically associated with the property at 100 Fore Street. The proposed project was further contemplated when the City of Portland transferred property to 0 Hancock LLC for the development of the WEX Corporate headquarters building (now under construction and expected completion December 2018). At that time, the Applicant discussed and committed to the development of a parking garage/office complex at the 100 Fore Street site. The Applicant has assembled a team consisting of Archetype PA, Cianbro, ALA Landscape Architecture and Stantec to assist with plan development and permitting.

PROJECT OVERVIEW

100 Fore Street LLC is proposing a three-level parking garage with two levels of commercial office space above on a 2.97-acre lot located at 100 Fore Street. The site is identified as Lot 10 on Tax Map 19, Block A. The site is currently in the B6 Commercial Business Zone and Eastern Waterfront Overlay District. The site contains a single approximately 29,675 SF single story building that has contained multiple tenants, including the Hamilton Marine retail store and Xpress Copy. The existing site also contains 136 parking spaces and various utilities including water, sewer, gas and power services from Fore Street. The existing site has two driveways off Fore Street. The majority of the existing building will be demolished to make way for the proposed five story building. Approximately 9,100 SF of the existing building, located at its west end, will be retained and refurbished to provide a private fitness center for staff of the office building and those of the new building at 1 Hancock Street (WEX Headquarters).

The new building development will include a three-level parking garage with two upper levels for office space for a total of five floors. The overall building footprint will be approximately 64,980± SF. Each of the floors will have the following sizes:

Description	Size (SF) (parking count)
Ground Level Parking	64,980 (182 Spaces)
Level 1 Parking	64,320 (178 Spaces)
Level 2 Parking	64,490 (179 Spaces)
Level 3 Commercial Office	42,980
Level 4 Commercial Office	39,190
Total	**275,960 SF (539 Spaces)**
Additional Street Level Retail	3,808 SF

The new 539-space three (3) level parking garage will require three access locations, as each parking deck will require independent access as there will be no interior access ramps. The ground level lot will be accessed from a new driveway located just west and opposite the Mountfort Street intersection along Fore Street. The first and second level decks will be accessed from the site's proposed easterly driveway. The 28' wide easterly driveway will be constructed to satisfy City street standards as it may ultimately be extended to cross City land to the south and connect to the proposed Thames Street Extension, tentatively scheduled for construction by the City of Portland in 2019 or thereabouts. It is expected that Unified Parking Partners or a similar operator will actively manage the garage operations including directional signage, security, ticketing and related issues. The building will contain three (3) stairwells and two full building elevators located on each end of the building. The proposed office tenants are expected to lease spaces in the garage and spaces will also be open for public parking. There will also be 19 regular surface parking spaces on the site to provide a total of 559 parking spaces on the property. Per section 14-332, the parking requirements for the 82,400 SF office will be 206 spaces, thus leaving approximately 352 spaces for other lease tenants (including street level retail) and public parking in the nearby vicinity.

The site improvements include the following:

- Removal and resetting of granite curb and new Brick sidewalk to replace the existing concrete sidewalk along the Fore Street Right of Way.
- Construction of an easterly entrance off Fore Street, nearly in the same location as an existing driveway. The new driveway will be designed to allow for its continuation southerly to the City owned parking lot and to the end of the proposed Thames Street Extension. The Easterly driveway will also provide access into the Level 1 and Level 2 parking decks as well as pedestrian access to an interior lobby containing the elevator and stairwell. It is likely that the upper two floors of the parking garage will be dedicated to the office tenants and potentially offsite office tenants.

- Construction of a new driveway off Fore Street, located just west of the Mountfort/ Fore Street intersection. This new driveway will provide access to the ground level surface parking and also the ground level garage parking area. The ground level parking may be dedicated to not only on and offsite office tenants, but for general public parking (subject to fees). A third, existing driveway at the far west end of the property, will remain in use to provide access to the end of the existing building to remain, since there is a loading door on the building that will remain available for use.
- New utilities for water supply, sewer, natural gas, power, and communications will be extended into the new building. There are existing utilities that serve the building space to remain and these will be evaluated for continued use for the fitness center. If necessary, these existing utilities may be upgraded. There are existing overhead utilities for power and communications along Fore Street that are adequate to serve the new facility. A new underground power service will be extended from the street to a pad mount transformer and secondary service into the building. Swaney lighting has prepared a site lighting package that is included in the submission materials.
- The Fore Street Sidewalk along the site frontage currently consists of granite curbing and concrete. The concrete sidewalk will be removed and new brick sidewalk will be installed along the length of the street frontage. The sidewalk will also be widened from an existing width of about 5' to 8'-10'. ALA Landscape Architecture is working on advancing the streetscape and possible plaza elements with an emphasis on the pedestrian connectivity within the area characterized as a future corridor connecting an extension of Mountfort street towards the waterfront. The easterly side of the site is also an area of advanced landscape treatment given the location of various building entrances and the potential for a future vehicular and pedestrian connectivity to Thames Street Extension.
- The ability to provide street level retail space along the Fore Street frontage remains subject to continued consideration and design refinement. Additional information pertaining to the small retail component of the design will be provided in upcoming uploads associated with this application.

CLOSURE

As outlined in the Level III Site Plan submission requirements and checklist, we will upload the following materials:

- General Application Documents
  - Project Description
  - Level III Application Checklist
  - Right, Title and Interest
  - Zoning Assessment
  - Existing and/or Proposed Easements
  - Waiver Request and Waiver Table

  - Financial Capacity
  - Technical Capability
- Transportation
  - Transportation Narrative
  - Traffic Assessment by Traffic Solutions
- Environmental and Landscape Features
  - Narrative to Address Standards
- Environmental and Stormwater
  - Narrative to Address Standards
- Public Infrastructure and Safety
  - Narrative to Address Standards
- Site Design
  - Narrative to Address Standards
- Construction Management Plan
- Site Plans

On behalf of the 100 Fore Street, LLC, we look forward to your continued assistance on the project and we look forward to the next available workshop meeting with the Planning Board. As is required, once we complete the Planning Board workshop, the applicant will be conducting a Neighborhood Meeting. We anticipate this meeting will be conducted prior to the Public Hearing.

If you have any questions regarding the materials being submitted, please contact this office.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Stephen R. Bushey, P.E.
Associate
Tel: 207-887-3478
Stephen.bushey@stantec.com

Attachments

c: Jonathan Cohen, 100 Fore Street LLC
Bill Hopkins, Archetype
Jonathan Dicentes, Cianbro

GENERAL APPLICATON DOCUMENT

PROJECT DESCRIPTION

PROJECT OVERVIEW

100 Fore Street proposes to construct a mixed used building consisting of a three level 540 space parking garage with approximately 82,400 SF of office space with the two additional levels atop the garage. Additional street level retail is currently being considered in accordance with 14-270(a)(2).b of the code, although the applicant may ultimately seek a waiver of these requirements. The property is located along the south side of Fore Street generally between Hancock Street to the west and the former Portland Company site at 58 Fore Street to the east. The prospective development site currently contains an existing single level 29,675 ± SF commercial building that includes office and retail space. There are also 136 paved parking spaces on the property that benefit onsite lease tenants and several offsite lease tenants. The project is guided by the Eastern Waterfront Master Plan and is designed to allow permeability and accessibility across the site. This is evidenced by the site design that contemplates the extension of the easterly driveway to connect with a future Thames Street Extension, between the site and the Fore River frontage. The site design also includes prohibition of building space within a designated area characterized as an extension of the Mountfort Street right of way, that would extend from Fore Street to the southerly boundary line. Recent zoning language amendments to the Eastern Waterfront Overlay district, allow for the project height proposal.

Within a portion of the office space WEX has agreed on a long-term commitment to lease space in the building. Additional office tenant(s) are yet to be named.

PROJECT PURPOSE AND NEED

The property is a prime location for a mixed-use development to include structured parking and additional upper floor office space. The site can take advantage of proximity to the heavy foot and car traffic from the Old Port as well as expansive views of the harbor and accessibility to the City's adjacent east end parks and waterfront walking paths.

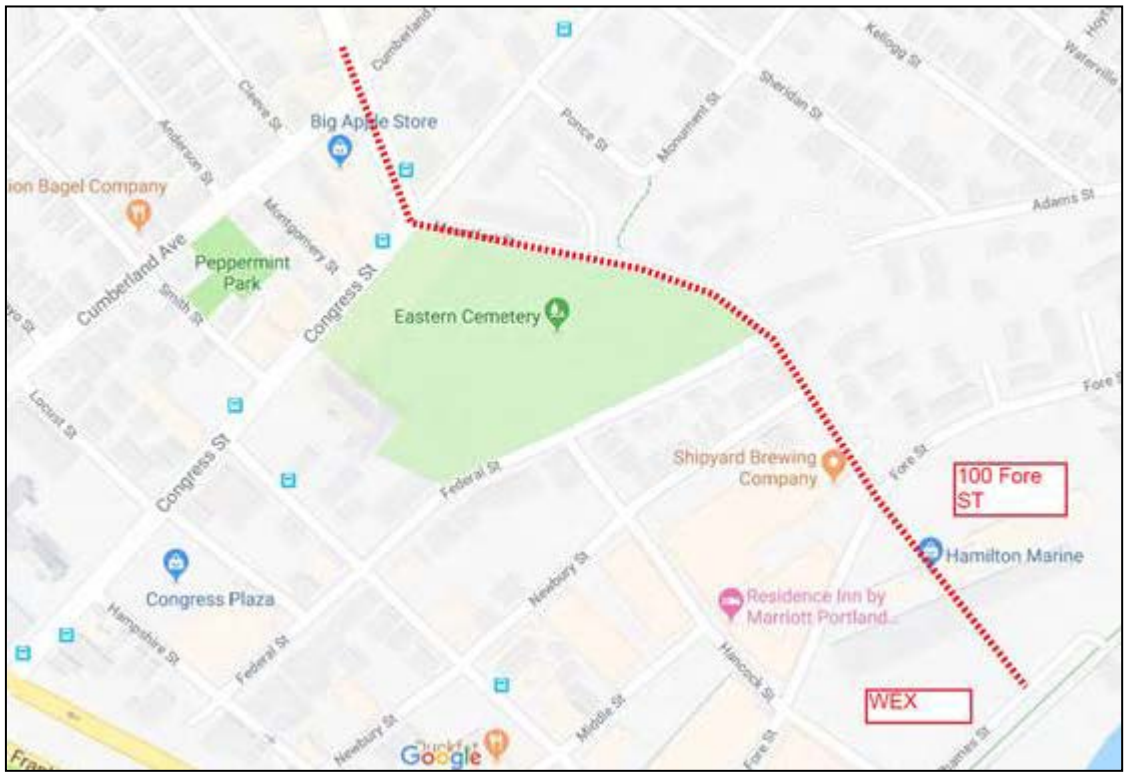
The advantages of the Property are highlighted in the Eastern Waterfront Master Plan (the "EWMP") and the site is best suited to be densely developed with office and parking space surrounded by pedestrian pathways and public plazas and amenities. A great benefit to the site is the natural slope of the East End of Portland, north of the property which allows for the creation of a denser urban fabric through height within the property without creating a wall in front of the residential housing units, higher up on the hill.

The proposed project is for a 275,960 SF, 5-story mixed-use building with a 64,980± SF footprint. The bottom three floors will contain the parking areas and the upper two floors will contain the office space. As shown in the building architectural plans, the office spaces each step back from the Fore Street frontage in a manner that satisfies

the recently enacted Eastern Waterfront Overlay district setback requirements. The office uses will bring hundreds of jobs to the City of Portland and will provide meaningful benefits to the City's economy and tax base. The parking garage will provide needed parking capacity for onsite and offsite office uses, and various lease tenants in the area.

The 100 Fore Street site and the Ocean Gateway Garage can accommodate, at a minimum, replacement parking for 53 City parking spaces and 117 public parking spaces lost as a result of the sale of the WEX Property at 1 Hancock Street.

Pedestrian and Public Outdoor Space: The project creates the opportunity for higher density and more pedestrian and public outdoor space, including sidewalk extensions as outlined in the EWMP. Most importantly the opportunity for pedestrian linkage between the City owned land off the end of Thames Street and Fore Street will be provided through sidewalks along the easterly driveway as well as from the Fore Street frontage opposite Mountfort Street through a dedicated view corridor to the south property boundary. This view corridor ultimately contemplates a future connection to Thames Street and the waterfront, that at a minimum, might provide pedestrian access and corridor linkage from Washington Avenue, Mountfort Street to Thames Street.



Public green spaces to the east side and off the northwest corner of the building are contemplated that will create new walkable areas through the site and landscaping which additionally helps buffer users from traffic and also enhance the site vernacular and aesthetic appearance. A public square could create a strong entrance to any retail portion of the property which would be along the Fore Street frontage. The plaza would be a prime space to include plantings, street furniture, public art or a monument. The plaza will transition down via stairs, ramps or combination to match the grade crossing of the ground level parking garage and ultimately extend through to the south

boundary. The design will leave opportunity for that future connectivity through to Thames Street.

Transportation: The EWMP conveys a strong interest in development promoting multiple types of transportation. As one tenant for the property, WEX would bring with it hundreds of employees who would be able to take full advantage of the proximity of systems already in place, including the nearby ferry terminal, the walking and biking trail along the eastern waterfront and the bus routes in the vicinity which include the METRO Route 1 at the east end of Fore Street[1] and Route 8 on India Street. As part of this application process, the Development Team including the Applicant and WEX representatives are working with Cushman Transportation Consulting, LLC to prepare a Transportation Demand Management Plan similar to the plan for the 1 Hancock Street site that will help WEX and other office tenants make best use of the site and the transportation systems available in the greater Portland area.

In addition to the systems already in place, bicycle storage will be added to the property, with exterior storage and racks in the plazas and entry locations, along with interior storage in the Garage and possibly the fitness center.

The Community benefits provided by the project include the following:

- The Project will contribute to the redevelopment and revitalization of the area;
- The Project will provide a quality office use destination to complement other mixed-use activities in the nearby vicinity; and
- The Project will provide additional parking capacity in the area. The applicant's parking facilities will amount to a total of 1,278 parking spaces between the Gateway Garage (720 spaces) and onsite (558 spaces).
- The Project will incorporate exterior site enhancements for outside Plaza space, landscaping, and related site amenities.

EXISTING CONDITIONS

The total site area is 129,212 SF (2.97 acres) and the property contains an existing single story metal clad building. The site is bounded to the north by Fore Street, to the east by the former Portland Company site, and to the south by a narrow strip (16' wide) of undeveloped grassed land owned by the City. Further to the south side is the existing office building owned by Jackrabbitt LLC and the now under construction WEX corporate headquarters. Additional City land and surface parking will remain southeast of the site. The site's historic use includes the Grand Truck Railroad yard that consisted of multiple tracks and portions of various structures. The site also contains paved surface parking for approximately 136 vehicles.

Existing utilities currently service the existing building and these, except for the power are expected to remain in service. Generally, public utilities for water, sewer, gas, power, and communications are located within Fore Street and will be extended into the new building. The existing overhead lines located along the site frontage will be raised once CMP sets new taller poles on the street.

[1] There is a bus stop at the corner of Atlantic and Fore Street approximately 1000 feet east of the site.

General site preparation is anticipated to be straightforward to include site grading, new utilities, drainage, building construction and site surface improvements for sidewalk restoration and landscaping. Early foundation preparation may involve the installation of piles to support traditional concrete foundations. It is anticipated that old abandoned foundations and related pipes may be encountered during the course of construction and appropriate actions will be taken to address these conditions.

Existing topography is relatively flat in the parking areas with elevations ranging from approximately 13.0 to over 28.0 based on NGVD 1929 vertical Datum. Fore Street rises from west to east along the site frontage and the westerly elevation is about 18.0 and the easterly elevation is about 30.0'. The existing building finish floor elevation is about 17.0'. The lot is internally draining, meaning the lowest portion of the site is towards the east end of the site and the higher grades are around the perimeter. It is believed the several onsite catch basins likely tie into the combined sewer in Fore Street, although the structures are in poor condition and can't be readily inspected. The site improvements will involve ground disturbance over the entire site. Summit GeoEngineering has been engaged to assist with a geotechnical investigation. Their initial findings include identifying soft marine clay soils underlying the site. The preliminary recommendations include the use stone filled piers or piles to aid with addressing long term settlement potential.

The site is not within the Shoreland Zone of the Fore River. This portion of the Fore River is tidally influenced and has a mean annual high tide elevation of 7.4 (NGVD 1929) and a 100-year FEMA flood elevation of 10.0 (NGVD1929). Tidal information as determined by Owen Haskell, land surveyor is defined as follows:

- Mean High Water is Elevation 4.95
- Mean Low Water is Elevation is -4.95

The building finish floor elevation within the ground level parking area will be 14.00' (NGVD29) thus placing it greater than 2' above the 100-year flood level.

Photographs of the existing site conditions are contained at the end of this narrative.

ACCESS CONDITIONS

The new 539-space three (3) level parking garage will require three access locations, as each parking deck will require independent access as there will be no interior access ramps. The ground level lot will be accessed from a new driveway located just west and opposite the Mountfort Street intersection along Fore Street. The first and second level decks will be accessed from the site's proposed easterly driveway. The easterly driveway will be constructed to satisfy City street standards as it may ultimately be extended to cross City land to the south and connect to the proposed Thames Street Extension, tentatively scheduled for construction by the City of Portland in 2019 or thereabouts. It is expected that Unified Parking Partners or similar operator will actively manage the garage operations including directional signage and related issues. The proposed office tenant is expected to lease spaces in the garage and spaces will also be open for public parking. Per section 14-332, the parking requirements for the 82,400

SF office will be 206 spaces, thus leaving approximately 352 spaces for other lease tenants and public parking in the nearby vicinity.

UTILITIES

The development site will require utility service extensions from within Fore Street. According to the City and utility provider's records, the following is available:

- Public water supply is available in Fore Street. A 6" fire service and a 4" domestic water service are proposed off an existing 8" water main in Fore Street. Existing fire hydrants are available within 500 feet of the site. The PWD may install a new water main in the easterly driveway to extend to Thames Street Extension and if completed, the site's water services will extend off this new main.
- A sanitary sewer service will tie into the existing 36" combined gravity sewer within Fore Street. A grease tank will also be installed for the benefit of oil-water separation from the garage spaces. A wastewater capacity request has been sent to the City's Public Works Division as part of this application.
- Three phase power is available from Fore Street directly along the site frontage. A new transformer pad will be installed adjacent the new building and within the sidewalk on the east side of the site and underground secondary power will be extended into the building.

TOPOGRAPHY AND DRAINAGE

Owen Haskell, Inc. has completed a Boundary and Topographic Survey of the property. The site is relatively flat with the highest points along the Fore Street frontage. The site grades range from Elevation 13' (NGVD 29) on the east end of the site to elevation 29' along the Fore Street frontage.

The proposed building will have finish floor elevations established at elevation 14.00' which places it greater than 2 feet above the nearby Fore River 100-year flood elevation.

SOILS/GEOTECHNICAL REVIEW

A Geotechnical Investigation has been prepared by Summit GeoEngineering. It is anticipated the subsurface soils will consist of urban fill, marine clay, and sand. The current structural design planning is considering ground improvements to help reinforce ground conditions whereby traditional concrete spread wall and column footings can be utilized, and any pile supported foundations can be minimized.









GENERAL APPLICATION DOCUMENT

ZONING ASSESSMENT

See attached Zoning Assessment Table and additional information provided in cover letter.

ZONING ANALYSIS Relevant Zone(s) B-6 Urban Commercial Business Zone and Eastern Waterfront Mixed Zone

All Projects:

	Required	Proposed
Lot Size	None	2.97 ac.
Area Per Dwelling Unit	N/A	N/A
Minimum Street Frontage	N/A	737.67'
Front Yard Minimum	N/A	6"
Front Yard Maximum	10'	10'
Rear Yard	N/A	10'
Yard Right	N/A	N/A
Yard Left	N/A	N/A
Side Street Setback	N/A	71'
Step Back	N/A	N/A
Maximum Lot Coverage	100%	80.0%
Minimum Lot Coverage	N/A	N/A
Maximum Height	See Note 1	See Note 1
Open Space	N/A	N/A
Maximum Impervious Area	N/A	N/A
Pavement Setback	N/A	N/A
Floor Area Ratio	N/A	N/A
Off Street Parking Spaces	206	559
Loading Bays	N/A	
Other 1		
Other 2		
Other 3		

Note 1 - See City Council Order 68-18/19 dated September 17, 2018. Building plans by Archetype PA adhere to City Council action on building height.

Planned Residential Unit Developments (PRUD) Requirements NOT APPLICABLE

	Required	Proposed
Minimum Lot Size		
Minimum Lot Area per Dwelling		
Maximum # Units per Building		
Maximum Building Length		
Maximum Accessory Building Length		
Minimum Setbacks		
Minimum Building Separation		
Minimum Open Space		

Affordable Housing Density Bonuses (if applicable) NOT APPLICABLE

	Bonus Increase or Decrease	Maximum Allowable With Bonus	Proposed
Density			
Height			
Setback Reduction			
Recreation Space			
Maximum Accessory Building Length			
Minimum Setbacks			
Minimum Building Separation			
Minimum Open Space			
Explanatory Text 1 (optional):			
Explanatory Text 2 (optional):			
Explanatory Text 3 (optional):			

GENERAL APPLICATION DOCUMENTS

RIGHT, TITLE & INTEREST

A Quitclaim Deed from Hope 1, LLC to 100 Fore Street, LLC was executed on January 6, 2017 for the subject property. The Deed attached to this document was recorded in the Cumberland County Registry of Deeds as Book 33748; page 1.

Recorded in the Cumberland County
Registry of Deeds on 1/6/17 in Book 33748, Page 1

SHORT FORM QUITCLAIM DEED WITH COVENANT

HOPE 1, LLC, a Maine limited liability company with a place of business in Portland, Maine ("Grantor") FOR CONSIDERATION PAID, grants to **100 FORE STREET, LLC**, a Maine limited liability company with a mailing address of P.O. Box 910, Westbrook, Maine 04098-0910 ("Grantee") with QUITCLAIM COVENANT, certain real property, with any improvements thereon and all rights and easements appurtenant thereto, located at or near 100 Fore Street, Portland, Cumberland County, Maine, and more particularly described on **Exhibit A** attached hereto and made a part hereof.

The conveyance herein is made subject to all easements, covenants, restrictions and agreements of record, to the extent in effect and applicable, to leases and licenses disclosed to Grantee, and to real estate taxes not yet due and payable.

Being the same premises conveyed to the Grantor by Quitclaim Deed with Covenant from Avidity Partners, LLC, Trustee of the FOL Liquidation Trust, dated January 19, 2005, and recorded in the Cumberland County Registry of Deeds in Book 22261, Page 50.

IN WITNESS WHEREOF, Grantor has caused this instrument to be executed and delivered by its duly-authorized Chief Operating Officer below this 6th day of January, 2017.

WITNESS:

Tom S. Hanson

Hope 1, LLC

By: _____
George Cacoulidis
Duly authorized Chief Operating Officer

State of Maine
County of Cumberland

January 6, 2017

PERSONALLY APPEARED before me the above-named George Cacoulidis, Chief Operating Officer of Hope 1, LLC, and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said limited liability company.

Before me,

TS Hanson

Name: Tom S. Hanson
~~Notary Public~~/Attorney at Law
Commission Expires N/A

EXHIBIT A

A certain lot or parcel of land with the buildings thereon situated on the Southerly side of Fore Street in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

> Beginning on the Southerly side line of Fore Street at the Northwest corner of the premises conveyed to Frank J. Gaziano et al. by Canadian National Railway Company by deed dated November 1, 1973 and recorded in the Cumberland County Registry of Deeds in Book 3502, Page 247;

Thence N 79°-46' E along said premises conveyed to Frank J. Gaziano, et al. and along land now or formerly of Canadian National Railway 742.42 feet to an iron pipe on the Westerly boundary of land now or formerly of The Portland Company;

Thence Northwesterly along land of The Portland Company, on a curve to the right whose radius is 274.33 feet, 248.66 feet to an iron pipe on the Southerly side line of Fore Street, said iron pipe being distant 240.23 feet to a bearing of N 32°-18' W from the iron pipe at the terminus of the last described line;

Thence by the following courses and distances along the Southerly side line of Fore Street;

S 89°-32'-30" W	143.31 feet to an iron pipe;
S 78°-29'-30" W	172.03 feet to an iron pipe;
S 58°-36'-30" W	109.63 feet to an iron pipe;
S 42°-27' W	157.24 feet to an iron pipe;
S 35°-40' W	155.46 feet to the point of beginning.

Portland Maine Yes. Google's good here.

Christine Grimando <cdg@portlandmaine.gov>

100 Fore Street - Fire Dept access along East side of the building

1 message

Bushey, Stephen <Stephen.Bushey@stantec.com> Tue, Oct 16, 2018 at 4:49 PM
To: Christine Grimando <cdg@portlandmaine.gov>
Cc: "Filliettaz, Patrick" <Patrick.Filliettaz@stantec.com>, Seth Kimball <sk@acetola.com>, Nick Aceto <na@acetola.com>, "Bourassa, Kaleb" <Kaleb.Bourassa@stantec.com>

Christine,

We've been struggling a bit with the configuration and grading of the sidewalk and drop zone at the P1 level lobby entrance. We'd really like that sidewalk/plaza space to be wider and broader in front of the lobby entry off the small vehicle drop off lane. However right now we configured that lane to allow for fire trucks to go on it and then be able to turn around to go back to Fore Street and that has narrowed that sidewalk zone to an undesirable condition, at least as shown on the attached. The basic question is whether the Fire Dept will need large apparatus access to the drop off lane at the P1 level entrance lobby or will it be sufficient to have any large fire apparatus be kept to the main driveway that will extend from Fore St down to the Thames St. ext. That drive will be 28' wide to meet city standard street width, so ideally, if the drop off lane doesn't need to accommodate a fire truck we can probably reconsider how its designed and most likely come up with a better solution for the pedestrian side and entry plaza. Please discuss with other staff and FD tomorrow if you can. Thanks!

Stephen Bushey

Associate, Senior Project Manager

Direct: 207 887-3478
Fax: 207-883-3376
Stephen.Bushey@stantec.com

Stantec
482 Payne Road Scarborough Court
Scarborough ME 04074-8929 US

Stantec

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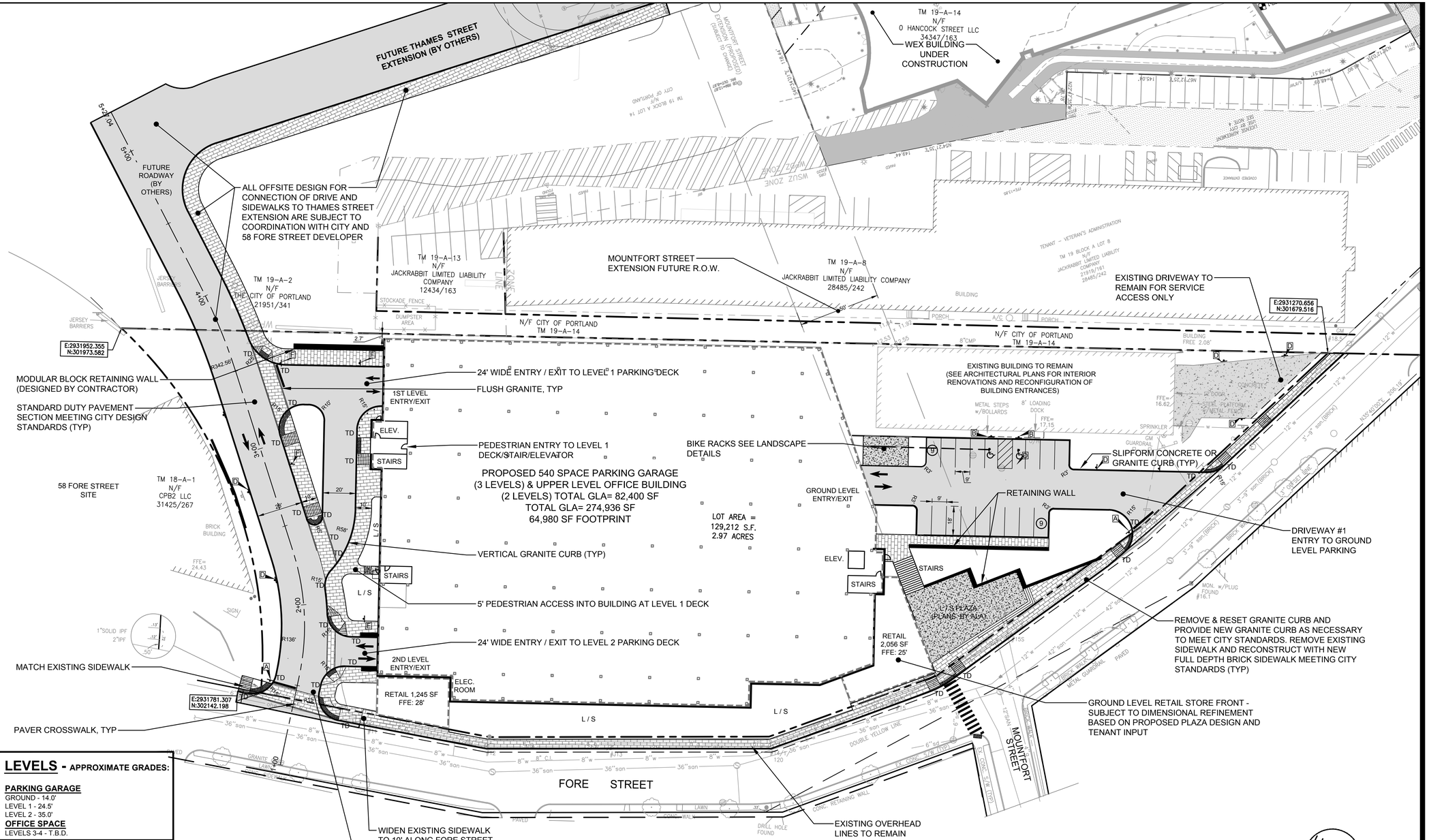

LEVELS - APPROXIMATE GRADES:

PARKING GARAGE
GROUND - 14.0'
LEVEL 1 - 24.5'
LEVEL 2 - 35.0'
OFFICE SPACE
LEVELS 3-4 - T.B.D.

PLAN REFERENCES:

1. "Topographic Survey, 100 Fore Street, Portland, Maine, made for Jonathan Cohen, P.O. Box 910, 865 Spring Street, Westbrook, Maine 04092", by Owen Haskell, Inc., Date: last revised 09/06/2018.
2. Building plans by Archetype, P.A.
3. "Site Development Plans for a commercial office building on Thames Street Property (One Hancock Street), Portland, Maine, November 2017, Construction Set", (Wex project), prepared by Stantec.
4. Portland sewer system infiltration - inflow analysis mapping by Hunter - Ballew associates, 1981. sheet N-3.

CURB LEGEND
GRANITE CURB
TD TIP DOWN

DIMENSIONAL REQUIREMENTS FOR THE B-6 EASTERN WATERFRONT BUSINESS ZONE

ITEM DESCRIPTION	LAND USE ORDINANCE REQUIREMENT	PROPOSED
MIN. LOT SIZE	NONE	2.97 ACRES
MIN. FRONTAGE	NONE	737.67 FEET
MIN. FRONT SETBACK	NONE (BUILD TO KEY BLDG. ENVELOPES SHOWN ON B6 BLDG. HEIGHT OVERLAY & BLDG. ENVELOPES MAP)	6 INCHES ±
MIN. SIDE SETBACK	NONE	71 FEET
MIN. REAR SETBACK	NONE	10.67 FEET
MAX. BUILDING SETBACK FROM STREET LINE	10 FEET (BUILD TO KEY BLDG. ENVELOPES SHOWN ON B6 BLDG. HEIGHT OVERLAY & BLDG. ENVELOPES MAP)	6 INCHES ±
MIN. LENGTH OF BLDG. WALL REQUIRED TO BE LOCATED ALONG STREET FRONTAGE OF LOT	70% OF LOT STREET FRONTAGE OR 25% OF BUILDING PERIMETER	30% OF BUILDING PERIMETER
MAX. LOT COVERAGE	100%	80% ±
MAX. BLDG. HEIGHT	SEE CITY COUNCIL ORDER 68-18/19	SEE ARCHITECTURAL PLANS FOR DETAILS

PRELIMINARY - NOT FOR CONSTRUCTION

SIGN LEGEND

R1-1 24"x24" A	R7-8 18"x12" / R7-8A 12"x6" B	18"x12" C	18"x12" D	24"x24" E

OWNER:
100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

Stantec
482 Payne Road Scarborough Court
Scarborough, Maine 04074-8929
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LANDSCAPE ARCHITECT
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SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

Revision	By	Appd.	DATE
3 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2 PROCESS SET	SRB	SRB	18.09.24
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 193350450_SP | DRWN: DBS | CHKD.: SRB | DSGN.: | 18.09.12 DATE
P.E. STEPHEN R. BUSHEY

Permit-Seal
STATE OF MAINE
STEPHEN R. BUSHEY
10-09-18
LICENSED PROFESSIONAL ENGINEER

Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
SITE LAYOUT PLAN

Project No. 210801622
Scale 1" = 30'

Sheet
C-3.0

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GENERAL APPLICATON DOCUMENT

FINANCIAL CAPACITY

The Applicant has adequate financial resources to undertake this project as identified in the letter from Bank of New Hampshire which accompanies this submission.

CONSTRUCTION COST ESTIMATE

A breakdown of the preliminary project cost estimates includes the following:

- Construction Cost: $22 to 30 million
- Soft Costs: $200,000 to $400,000
- **Total Costs: $23 to $31 million**

Bank of New Hampshire

September 28, 2018

City of Portland, Maine
389 Congress Street
Portland, Maine 04101

RE: Financial Capacity – 100 Fore Street project

To Whom It May Concern:

Jonathan Cohen is a client in good standing with Bank of New Hampshire. Mr. Cohen demonstrates both the financial capacity as well as the industry experience necessary to purchase, develop, construct, own and operate commercial real estate projects such as the contemplated parking garage and office building planned for the 100 Fore Street site in Portland.

If there are any questions regarding this matter, please do not hesitate to contact me at deering@banknh.com or (603) 527-3349.

Sincerely,

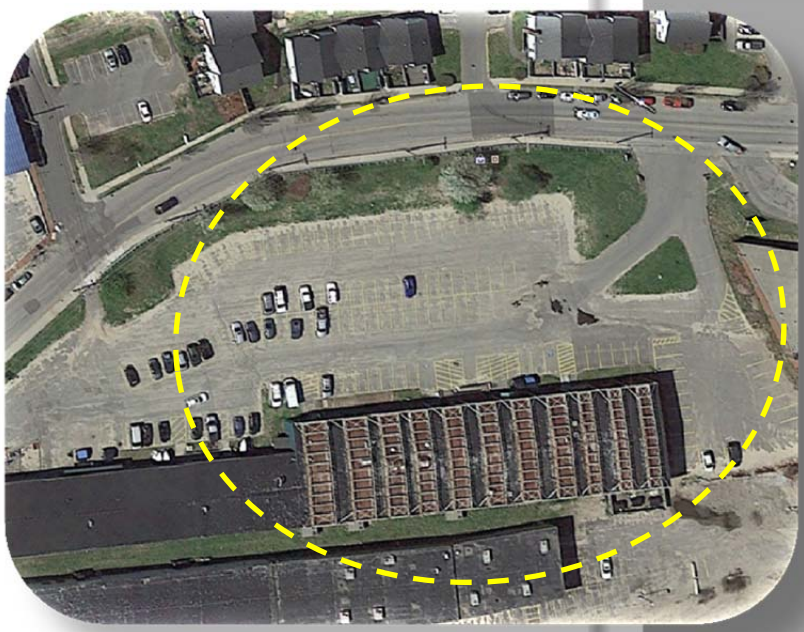
Jeremiah C. Deering
Senior Vice President
Commercial Banking Team Leader

The key to success starts with a solid foundation.
ENGINEERING | EXPLORATION | EXPERIENCE

Geotechnical Report

Proposed Building

100 Fore Street, Portland, Maine



Client
Archetype Architects
48 Union Wharf
Portland, Maine 04101

SUMMIT
GEOENGINEERING SERVICES

Project #: 16063
Date: 9/17/18

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September 17, 2018
Summit #16063

Archetype Architects
Attn: Bill Hopkins
48 Union Wharf
Portland, Maine 04101

Reference: Geotechnical Engineering Report – Proposed Building
100 Fore Street, Portland, Maine

Dear Bill;

Summit Geoengineering Services, Inc. (SGS) has completed a geotechnical investigation for the proposed development at the site referenced above. Our scope of services included the drilling of 3 borings, 3 probes, and 3 cone penetration tests (CPT) within the proposed development area and preparing this geotechnical report summarizing our findings and providing geotechnical recommendations. Our scope of services for this project did not include an environmental site assessment or further investigation for the presence or absence of hazardous or toxic material on, below, or around the site. Any statements in this report or on the soil boring logs regarding odors or unusual and suspicious conditions observed are for informational purposes and are not intended to constitute an environmental assessment.

The subsurface conditions encountered in our explorations generally consist of the following, starting from the ground surface:

- Pavement
- Existing Fill (very loose to compact)
- Outwash Sand (loose to dense)
- Glacial Till (dense)
- Bedrock

Bedrock was encountered at depths ranging from 16.0 feet to 45.0 feet below existing ground surface.

Based on the findings from our geotechnical exploration, structural loads provided to us, engineering analyses, and discussions with you and the design team, we recommend that the foundations for the new buildings within the proposed development be supported on ground improvement consisting of stone columns/aggregate piers.

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Discussions and recommendations for other geotechnical considerations such as subgrade preparation, permanent and temporary retaining wall design recommendations, allowable bearing pressure, pavement sections, and construction considerations are presented in this report.

We appreciate the opportunity to serve you during this phase of your project. If there are any questions or additional information is required, please do not hesitate to call.

Sincerely,

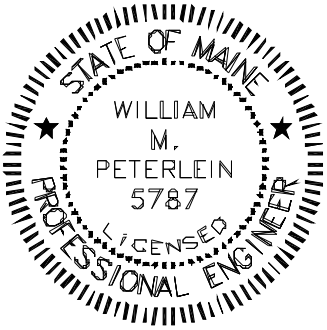
Summit Geoengineering Services, Inc.





Mathew Hardison, PE
Senior Geotechnical Engineer





William M. Peterlein, PE
President & Principal Engineer

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1.0 Project and Site Description

We understand that the project consist of the construction of a new three story building with full basement at the site referenced above with a footprint of approximately 70,000 square feet. The three floors and basement of the new building are summarized in the table below:

100 FORE STREET – PROPOSED BUILDING LAYOUT		
Floor	**FFE (ft.)**	**Floor Use**
Basement ("P0")	14.0'	Parking
First Floor ("P1")	22.5'	Parking & Office Space
Second Floor ("P2)	32.0'	Parking & Office Space
*Third Floor ("P3")	*	*

*The Proposed Fourth Floor will be constructed at a later date. The proposed layout is unknown at this time

The site is bound by Fore Street to the north and west and existing buildings/parking lots to the east and south. The existing site conditions include a one story metal-framed building within the southern portion of the proposed building and existing paved parking in the middle/northern portion of the proposed building. We understand that the existing building will be removed for the new construction. The grade of the existing parking is at or near elevation 14 feet which is the proposed basement FFE.

The existing grade along the northern boundary of the site slopes up steeply from approximate elevation 14 feet (parking lot grade) to elevation 29 feet (Fore Street grade). We understand that the existing slope will be filled in order to carry the grade of Fore to the edge of the building, therefore the northern wall of the proposed building will retain up to 13 feet of soil. The proposed northern wall alignment is approximately halfway up the existing slope, which will require temporary shoring in order to excavate and construct the wall footing.

We understand that fill will be imported along the proposed eastern side of the building to construct a driveway/access drive. Proposed grade along the wall ranges from elevation 29 feet to 21 feet, requiring a retaining wall height of 7 feet to 15 feet. Proposed grade on the exterior of the south and west of the building is at or near elevation 14 feet so no retaining wall will be required.

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1.1 Structural Loads

A preliminary foundation plan was provided to Summit Geoengineering Services (SGS) by Simpson Gumpertz & Heger dated June 6, 2018. Based on this loading diagram, maximum column loads (dead load+ live load) will range from 150 kips to 625 kips. Based on further discussions with the design team, we understand that the maximum uplift loads may be upwards of 300 kips.

2.0 Subsurface Explorations

Summit Geoengineering Services (SGS) observed the subsurface conditions at the site with the drilling of 3 borings (B-1 through B-3) , three probes, (P-1 through P-3), and 3 cone penetration tests (CPT-1 through CPT-3) on November 2nd and 3rd, 2017 using a rubber track mounted Power Probe 9500 VTR. All borings, probes, and CPTs were advanced to refusal, ranging in depth from 11.4 feet to 45.0 feet. Borings were advanced using 3-inch direct push steel casing and rotary wash. Soils were visually classified (*ASTM D2488*) using SPT split spoon sampling (*ASTM D1586*). The probes were performed at the locations of the CPTs in order to verify refusal depths or to penetrate the dense till which the CPT could advance through.

Three cone penetration tests (*ASTM D5778*) were performed using a 5-ton digital cone anchored using a single-point hollow stem auger system. Parameters obtained include cone resistance (q_c), sleeve friction (f_s), and piezocone pore pressure (u). Shear wave velocity (*ASTM D7400*) was performed in all of the CPTs.

The explorations were located by SGS by taping and pacing from existing site features. The exploration locations are shown on the Exploration Location Plan in Appendix A. Logs of the explorations are provided in Appendix B.

3.0 Subsurface Conditions

3.1 Soil

The following subsurface layers and thicknesses were encountered in our geotechnical investigation, starting from the ground surface:

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- ***Pavement***, 4 inches to 6 inches (where present)
- ***Fill,*** 4.0 feet to 14.0 feet
- ***Outwash Sand,*** 4.0 feet to 15.0 feet
- ***Glacial Till***, 0.6 feet to 26.0 feet
- ***Bedrock,*** depth of 16.0 feet to 45.0 feet.

The table below summarizes the thickness of each soil layer and depth to refusal encountered at each exploration location. Note that Probes P-1, P-2, and P-3 were performed in the same locations as CPT-1, CPT-2, and CPT-3 respectively to determine soil layering and bedrock depths.

SUMMARY OF EXPLORATIONS AND SOIL LAYERING					
Exploration	**[1]Ground Surface Elevation (ft)**	**Refusal Depth (ft)**	Fill Thickness (ft.)	Outwash Sand Thickness (ft.)	Glacial Till Thickness (ft.)
B-1	14.0’ +/-	16.6’	11.8’	4.0’	0.6’
B-2	13.0’ +/-	31.3’	14.0’	8.5’	8.3’
B-3	12.5’ +/-	37.5’	12.5’	8.0’	16.5’
CPT-1/P-1	16.0’ +/-	32.3’	7.0’	11.0’	14.3’
CPT-2/P-2	15.0’ +/-	16.0’	10.0’	2.0’	4.0’
CPT-3/P-3	13.0’ +/-	45.0’	4.0’	15.0’	26.0’

[1]**Note:** Elevations are based on an interpolation of the site contours provided in the Site Plan
NE = Not Encountered

Pavement. The pavement at the site was encountered in Borings B-1, B-2, and B-3 and is 4” to 6” thick. The pavement is poor to moderate condition.

Fill. The fill was encountered in all of the explorations at the site and ranges in thickness from 4.0 feet to 14.0 feet. In general, the fill is described as sand with trace to some silt and gravel. The fill contains an assortment of man-made materials including coal, bricks, ash, wood pieces, and concrete. A 24” layer of concrete was encountered near the ground surface at the Boring B-3 location. At some locations within the fill, the main constituent is the man-made material (i.e. white or black ash) with a minor presence of mineral soil. Blow counts from Standard Penetration Testing (SPT-N) split spoon sampling in the fill ranged from 2 to 22 and averages 10 blows per foot (bpf). The fill is very loose to compact, humid to wet, and visually classifies as SP-SM, SP, or SM in accordance with the Unified Soil Classification System.

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Outwash Sand. The outwash sand was encountered in all of the explorations and ranges in thickness from 4.0 feet to 15.0 feet. The glacial marine soil is described as olive gray to brown fine to coarse sand with trace to some silt and gravel. The layer is loose to dense, wet, and contains a 6" silty clay layer in Boring B-1. SPT-N in the outwash sand ranges from 6 to 34 with an average of 21 blows per foot. The glacial marine classifies as SP, SM, or SP-SM in general accordance with USCS.

Glacial Till. The glacial till soil was encountered in all of the explorations. It ranges in thickness from 0.6 feet to 26.0 feet. The glacial till is described as gray medium to coarse sand or silt with little to some gravel. The layer is compact to dense and moist to wet. SPT-N in the glacial till ranges from 19 to 50 with an average of 35 blows per foot. The glacial till classifies as ML or SP-SM in general accordance with USCS.

3.2 Groundwater

On the day of the explorations, groundwater was encountered in all of the explorations at depths ranging from 6.8 feet to 9.0 feet below ground surface (approximate elevation 5.0 feet to 8.0 feet). The table below presents the depth and approximate elevation of the groundwater measured on the days of the explorations.

GROUNDWATER DEPTHS and ELEVATIONS		
Exploration	**Depth (ft.)**	**Approximate Elevation (ft.)**
B-1	8.3'	5.7' +/-
B-2	9.0'	5.0' +/-
B-3	9.0'	5.0' +/-
CPT-1/P-1	8.0'	8.0' +/-
CPT-2/P-2	7.6'	7.4' +/-
CPT-3/P-3	6.8'	6.2' +/-

Note: All elevations are approximate and were interpolated from the Site Plan.

3.3 Bedrock

Bedrock was encountered at the depths and approximate elevations shown in the table below. Mapping by the Maine Geological Survey indicates the bedrock at the site is of the Precambrian Z Spring Point Formation consisting of green schist and amphibolite facies ranging from mafic to felsic volcanic rock.

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BEDROCK DEPTHS and ELEVATIONS		
Exploration	**Depth (ft.)**	**Approximate Elevation (ft.)**
B-1	16.6’	-2.6’ +/-
B-2	31.3’	-17.3’ +/-
B-3	37.5’	-23.5’ +/-
CPT-1/P-1	32.3’	-16.3’ +/-
CPT-2/P-2	16.0’	-1.0’ +/-
CPT-3/P-3	45.0’	-32.0’ +/-

Note: All elevations are approximate and were interpolated from the Site Plan

4.0 Geotechnical Evaluation

Based on our understanding of the proposed project, we believe that the new building and the associated development are feasible from a geotechnical standpoint. The building can be constructed using conventional spread footings on frost wall with a slab-on-grade assuming the ground improvement recommendations provided in Section 5.0 are followed. The proposed building retaining walls and temporary shoring should be designed using the recommendations provided in Section 6.0. The primary geotechnical challenges associated with the proposed development include:

- Potential for excessive total and differential settlement of footings supported on the existing loose fill.
- A deep cut into the existing slope for the construction of the proposed northern foundation wall requiring temporary shoring along Fore Street.
- Need for rock anchors or alternative uplift capacity due to the large uplift loads on the foundation.

The feasibility of following foundation types were evaluated for construction of the new building:

- Shallow Foundations
  - Spread Footings
- Deep Foundations
  - End Bearing Piles
- Ground Improvement
  - Preloading
  - Overexcavation and Replacement
  - Stone Columns/Aggregate Piers
  - Rigid Inclusions

The proposed building footings will be supported directly by the existing fill at the site, which was identified to contain a significant presence of man-made constituents (i.e. brick, ash, clinker, wood pieces, etc.) and is in a very loose, wet condition. Summit Geoengineering Services (SGS) performed settlement computations using the foundation loads provided to us (summarized in Section 1.1) by Simpson Gumpertz & Heger. Anticipated settlements for the unimproved fill exceeded 3 inches under the proposed column loads, which we anticipate will not be tolerable for the proposed structure. We evaluated the use of localized improvement methods (i.e. proofrolling and/or including geotextile fabric); the variable composition of the fill resulted in unacceptable foundation settlements.

The ground improvement options of preloading and overexcavation/replacement were determine to not be feasbile. Preloading, even at large fill heights, would not provide adequate improvement to the fill to reduce long term settlements to the criteria stated above. Overexcavation/replacement would be prohibitively expensive due to the thickness of fill as well as the cost of disposal due to the potential for environmental contaminants.

Consequently, the remaining feasible foundations options include end bearing piles, stone columns/aggregate piers, and rigid inclusions. The rigid inclusion option also includes the option for a pile-supported load transfer platform (LTP). The table below summarizes the advantages and disadvantages of ground improvement and pile options for the proposed building.

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GROUND IMPROVEMENT AND PILE FOUNDATION OPTIONS		
Method	**Pros**	**Cons**
Stone Columns / Aggregate Piers	• Less expensive than alternatives. • Pile caps not needed	• Large number needed due to high loads. • Minimal uplift capacity • Lower capacity than other options
Rigid Inclusions / Pile-Supported LTP	• Possibly less expensive than deep foundations • Pile caps not needed • Higher capacity than stone columns/agg. piers	• Load transfer platform may increase excavation depth • No uplift capacity • More expensive than stone columns/aggregate piers • Lower capacity than piles
Steel H-Piles or Pipe Piles	• High Capacity, Fewer Needed • Capacity confirmed with PDA testing	• Pile caps needed • More expensive than stone columns/aggregate piers • Corrosion Potential

SGS performed settlement computations assuming that the existing fill soil is improved with stone columns/aggregate piers extending through the existing fill and outwash sand, terminating on the glacial till. Based on the preliminary computations, we anticipate that total and differential settlement of the proposed footings can be limited to 1.0" and 0.5", respectively, if ground improvement (i.e. stone columns or aggregate piers) are effectively used to improve the existing site soils. We anticipate that stone columns will be the most economical and quickest subgrade improvement method for the proposed building foundation while providing an adequate bearing subgrade for the new building. While rigid inclusions and end bearing piles are a feasible option for the new building, we recommend the use of stone columns/aggregate piers.

Due to the close proximity of Fore Street along the northern side of the proposed building wall, a vertical cut will be required to construct the permanent retaining wall. This will necessitate the use of temporary shoring in this area. Based on discussions with the design team, we understand that the preferred shoring system will consist of driven sheet piles braced with internal rakers connected to deadmen. If sheet piles are determined to be infeasible, solider pile and lagging walls can also be considered for use.

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We understand that soil anchors are being avoided if possible for the new project in order to avoid placing tiebacks into the City of Portland property (i.e. Fore Street). We anticipate that to complete the building foundation construction, a relatively complex staged construction scheme will need to be developed, utilizing internally braced systems with concrete or sheet pile deadmen. We have attempted to cover geotechnical design recommendations for potential bracing/shoring schemes within this report. If additional recommendations are needed based on updated or refined concepts, we should be notified in order to provide these. Also, final design computations for the shoring and retaining walls should be provided to us so we can verify that the assumed soil and water conditions match the recommendations provided in this report. Geotechnical design parameters have been provided in Section 6.0

Based on discussions with Simpson Gumpertz & Heger, we understand that uplift loads on some of the isolated footings will exceed the dead weight on the footings and the overburden soil weight for practical footing depths. We anticipate that rock anchors will be required to resist these uplift loads. We have provided geotechnical recommendations for rock anchors in Section 5.

5.0 Geotechnical Recommendations – Footing Design

This section provides geotechnical recommendations for the design and construction of the stone column/aggregate pier ground improvement option. If alternative foundation improvement options are selected, SGS should be contacted so that we can provide applicable recommendations.

5.1 Stone Columns/Aggregate Piers

Stone columns/aggregate piers are considered a vibro-replacement or vibro-displacement type ground improvement intended to increase the stiffness and bearing capacity of the supporting soil. Well-graded gravel or ¾" crushed stone is installed into the subgrade via either pre-drilled cavities or inserted with a hollow mandrel. The gravel or stone is compacted and densified in lifts to reinforce the existing soils and increase the net modulus to reduce settlement and increasing bearing capacity.

We recommend that the stone columns/aggregate be extended through the existing fill and native outwash sand to bear directly on the dense glacial till or bedrock surface.

Ground improvement is typically provided as a design/build package from a specialty contractor. We recommend that the ground improvement system be designed and installed to meet the following foundation performance criteria:

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- Maximum Allowable Bearing Pressure: 5,000 psf
- Maximum Total Long-Term Settlement: 1.0 inches
- Maximum Differential Long-Term Settlement: 0.5 inches between adjacent columns

If stone columns/aggregate piers are selected, we do not anticipate that they will need to be grouted.

Designs and drawings for ground improvement systems and all ground improvement components should be designed and stamped by a qualified Maine Licensed Professional Engineer. The contractor submittal shall include detailed design computations and construction installation drawings. SGS should be retained to review the contractor submittal on behalf of our client.

We recommend that a minimum of 1 load test be performed per building for stone columns/aggregate piers for every 500 units installed. Additional load tests and/or proof tests will be at the discretion of the ground improvement designer.

Any rubble/debris encountered in the upper fill layer that restricts installation will need to be removed or the hole will need to be pre-augered. Soil parameters used in the design of the ground improvement systems are at the discretion of the designer. Based on preliminary stone column/aggregate pier calculations, we estimate that an area replacement ratio of 25% or higher may be required to obtain the allowable bearing pressure of 5,000 psf.

Assuming that the subgrade preparation recommendations contained herein are followed, the proposed slab or pavement can be constructed as a slab-on-grade on the existing proofrolled fill without the need for ground improvement.

5.2 Footing Subgrade Preparation

Based on the proposed grades, we anticipate that existing fill or native outwash sand will be exposed beneath footings for the new building. Assuming that the ground improvement system is installed in accordance with the recommendations in Section 5.1, and the recommendations provided below are followed, an allowable bearing pressure of 5,000 psf can be used to proportion the footings for the new building:

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- All topsoil, pavement, and existing building elements are removed from within the proposed building footprint prior to excavation of the footing trenches.
- All footings exposed to freezing temperatures are constructed at the recommended frost protection depth of 3.5 feet below exterior finish grade, constructed on a minimum of 6" of ¾" crushed stone (for a total frost-protected depth of 4.0 feet). Interior footings in continuously heated areas should be constructed at a minimum depth of 1.5 feet below FFE and constructed on a minimum of 6" of ¾" crushed stone.
- If soft or unsuitable fill is encountered at the bottom of the excavation, it should be removed and replaced with ¾" crushed stone prior to proofrolling. If a significant amount of soft/unsuitable soils are encountered, SGS should be notified. Unsuitable soils should be removed from beneath footings at a 2V:1H taper beyond all edges of the footing.
- Exposed soil at the bottom of footing trenches is proofrolled with a minimum of 6 passes with a large (minimum 10 tons) vibratory roller. Proofrolling should be performed on dry, unfrozen soils. Any loose or soft areas identified during the proofrolling process should be removed and replaced with ¾" crushed stone.
- All placed fill within the building footprint consists of Structural Fill (SF, see Section 5.6 for gradation and compaction requirement) or ¾" crushed stone.

The ground improvement design may include additional subgrade preparation recommendations beyond those listed above (e.g. thicker crushed stone layer, use of geotextile, etc.). SGS should review the ground improvement design to confirm its accordance with the recommendations provided in this report.

5.3 Uplift Capacity

5.3.1 Rock Anchors

Based on discussions with Simpson Gumpertz & Heger, we understand that some of the proposed footings will have significant uplift loads and that rock anchors will be required for some of the proposed footings. We recommend an ultimate rock-grout bond stress of 120 psi be used in the design of the rock anchors. We recommend that the bonded zone start at a minimum length of 10 feet below the bedrock surface to allow for a free stressing zone. We further recommend that the rock anchors be installed with a Class 1 corrosion protection system. A minimum factor of safety of 2.5 should be used in bond stress calculations. If a 6" diameter hole is used for an anchor, this provides approximately 16 kips of uplift resistance per foot of bonded length.

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To ensure adequate rock breakout capacity, we recommend that bond length of the anchors be a minimum of 5 feet. The calculation of the rock breakout was based on a failure cone projected 45° from the midpoint of the bonded zone, using a rock unit weight of 150 pcf and a factor of safety of 1.0 on the rock weight resistance. Based on this, we recommend a minimum rock anchor spacing of 5 feet. We recommend a maximum of two rock anchors per footing. In total, the rock anchor tendons should extend a minimum of 15 feet below bedrock surface (free stress zone + bond zone). Centralizers should be used for all installed anchors.

All installed anchors should be proof tested to a minimum of 133% of the design load, not to exceed 60% of the tensile strength of the steel. We recommend that the proof testing of all of the anchors be performed in accordance with the Post Tensioning Institute 2014 recommendations (PTI DC35.1-14).

5.3.2 Stone Column/Aggregate Pier Uplift Capacity

We recommend that the uplift loads for the new foundation be supported with rock anchors if the net uplift load (per footing) exceeds 30 kips. For uplift loads lower than 30 kips, the use of plates and anchor rods installed into the ground improvement elements and connected to the footing may be considered to provide uplift load capacity. The ground improvement designer should provide the allowable capacity and design of this uplift system. We anticipate that either grouted stone columns or rigid inclusions (i.e. concrete elements) will be necessary if the ground improvement elements are used for uplift capacity.

5.4 Frost Protection

The design air freezing index for the Portland area is approximately 1,200 degree F days (10 year, 90% probability). Based on this, a total of 4.0 feet of frost protection should be provided for the exterior footings and interior footings exposed to freezing temperatures. Interior footings constructed in continuously heated areas can be constructed at a depth of 2.0 feet below interior grade. Since the footings will be constructed on a minimum of 6 inches of drained crushed stone, the bottom of exterior and interior footings may be constructed at a minimum depth of 3.5 feet and 1.5 feet, respectively.

We recommend that the exterior of all foundation elements exposed to freezing temperatures be backfilled with Foundation Backfill (FB). The portion of FB passing the 3” sieve size should meet the following gradation requirements:

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FOUNDATION BACKFILL	
Sieve Size	**Percent Finer**
3 inch	100
¼ inch	25 to 100
No. 40	0 to 50
No. 200	0 to 7

Reference: MDOT Specification 703.06, Type E (2014)

Maximum particle size should be limited to 6 inches. Foundation backfill should be placed in 6 to 12 inch lifts and compacted to 95% of its optimum dry density determined in accordance with ASTM D1557. The compaction requirement can be reduced to 90% beneath landscaped areas.

We understand that ¾" crushed stone is being considered for the exterior backfill of the northern retaining wall along Fore Street for the ease of installation and the reduction of load on the retaining wall. ¾" crushed stone is an acceptable substitute for Foundation Backfill.

5.5 Seismic Design

Based on the summary of field results we recommend Site Class D be used in accordance with the 2012 or 2015 International Building Code. The following seismic site coefficients should be used:

SUBGRADE SITE SEISMIC DESIGN COEFFICIENTS – 2012/2015 IBC	
Seismic Coefficient	**Site Class D**
Short period spectral response (S_S)	0.240
1 second spectral response (S_1)	0.078
Maximum short period spectral response (S_{MS})	0.384
Maximum 1 second spectral response (S_{M1})	0.187
Design short period spectral response (S_{DS})	0.256
Design 1 second spectral response (S_{D1})	0.125

5.6 Ground Floor Slab-on-Grade and/or Pavement

We understand that it is unknown at this time if the basement parking level will consist of pavement or a concrete slab. This section provides recommendations for a both types of

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surfaces. Additionally, this section will provide recommendations for both heated and unheated conditions.

5.6.1 Concrete Slab-on-Grade

We recommend that the slab for the new building in heated areas be constructed on a minimum of 12" of Structural Fill (SF, see table below) or ¾" crushed stone overlying a non-woven geotextile such as Mirafi 600x or approved equivalent. If ¾" crushed stone is used, it should be placed in 12" lifts and be compacted with a minimum of 4 passes in each of two perpendicular directions with a vibratory roller. If the slab is constructed in unheated building areas or is an exterior slab, the slab subgrade thickness should be increased to 24" and the slab should be constructed on 1.5" of rigid insulation. Alternatively, the subgrade soil thickness could be increased to 48" (including the slab) if rigid insulation is not used to provide adequate frost heave protection. The portion of SF passing the 3" sieve shall meet the following gradation requirements.

STRUCTURAL FILL (SF)	
Sieve Size	**Percent finer**
3 inch	100
½ inch	35 to 80
¼ inch	25 to 65
No. 40	0 to 30
No. 200	0 to 7

Reference: MDOT Specification 703.06, Type D

For the conditions described above, the slab can be designed using a subgrade modulus value of 150 pci.

5.6.2 Pavement

The mean annual freezing index for the Portland area is estimated at 900 degree days. Based on the subgrade and mean annual freezing index, the anticipated mean annual frost penetration depth is 36 inches.

We recommend a minimum total section thickness of 18 inches for pavement in unheated areas. We further recommend that the pavement section consist of the following materials:

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MATERIAL	THICKNESS (in)	SPECIFICATION
Asphalt Surface Course	1	MDOT 703.09 Type 9.5 mm or Type 12.5 mm
Asphalt Binder Course	2	MDOT 703.09 Type 19 mm
Base Soil	3	MDOT 703.06 Type A
Subbase Soil	12	MDOT 703.06 Type D

The Subbase soil thickness can be reduced to 6" if the area is continuously heated. For portions of the pavement subjected to light traffic loads of cars and light trucks we recommend MDOT Type 9.5mm surface course. The following specifications are for MDOT base and subbase gravel:

SIEVE SIZE	Percent Passing a 3-inch Sieve	
	MDOT Type A (Base)	MDOT Type D (Subbase)
3 Inch	100	100
2 Inch	100	--
½ Inch	45 – 70	35 – 80
¼ Inch	30 – 55	25 – 65
No. 40	0 – 20	0 – 30
No. 200	0 – 6	0 – 7

Reference: MDOT Specification 703.06, Aggregate for Base and Subbase (2014)

The recommendations above can be used for exterior pavement areas.

5.7 Groundwater Control

Based on observed groundwater levels, groundwater is anticipated to be at or near proposed bottom of footing elevation. Based on this we recommend perimeter underdrains be installed along the exterior foundation walls. In addition, we recommend exterior grades slope away from the building footprint to reduce runoff water from infiltrating the foundation backfill soils.

Perimeter underdrains should consist of 6 inch rigid perforated PVC placed adjacent to the exterior footings and surrounded by a minimum of 6 inches of crushed stone wrapped in filter

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fabric to prevent clogging from the migration of the fine soil particles in the foundation backfill soils. The underdrain pipe should be outlet to a location where it will be free flowing. If the grades do not allow a gravity outlet, a sump and pump would be required.

6.0 Retaining Walls

There are various retaining walls proposed throughout the new development area. Based on a preliminary grading plan provided to us and discussion with the design team, we understand that the northern wall, the eastern wall, and a portion of the western wall for the proposed building will be constructed as concrete retaining walls retaining up to 13 feet. Additionally, due to the steep existing slope and close proximity of Fore Street to the proposed northern wall, we understand that temporary shoring will be required to construct this permanent wall. The following table presents soil parameters to be used in the structural design of the retaining walls:

GEOTECHNICAL PARAMETERS – RETAINING WALL DESIGN				
PARAMETER	**EXISTING FILL**	**¾" CRUSHED STONE**	**[1]STRUCTURAL FILL**	**[1]FOUNDATION BACKFILL**
Total Unit Weight (γ_t)	125 pcf	115 pcf	135 pcf	130 pcf
Submerged Unit Weight (γ_B)	63 pcf	63 pcf	73 pcf	68 pcf
Effective Friction Angle (ϕ')	32°	40°	34°	32°
Cohesion (c)	0 psf	0 psf	0 psf	0 psf
Interface Friction Angle (δ_{pc}), Precast Conc.	17°	24°	22°	20°
Interface Friction Angle (δ_{cip}), C.I.P. Conc.	20°	30°	28°	26°
Interface Friction Angle (δ_w), Wood	19°	26°	24°	22°
Interface Friction Angle (δ_s), Steel	14°	22°	17°	14°
Adhesion (c_a)	0 psf	0 psf	0 psf	0 psf

[1]**Note:** Soil Parameters for Structural Fill and Foundation Backfill assume that the fill is placed in 12" maximum lifts and compacted to 95% of the dry density in accordance with ASTM D1557

Active and passive earth pressures can be calculated based on the above soil properties and the corresponding backslope/toeslope angles behind and in front of the walls. Earth pressures can be calculated using the Rankine or the Coulomb theories, whichever the designer feels is more

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appropriate. The Rankine theory will provide a more conservative coefficient that the Coulomb theory (wall batter and soil-wall interface friction are ignored using Rankine).

Active earth pressure can be used for calculating soil load on any walls which are designed to anticipate a horizontal deflection of the following magnitude:

ACTIVE EARTH PRESSURE – MINIMUM HORIZONTAL WALL DEFLECTION	
RETAINED SOIL	**REQUIRED DEFLECTION (% of Total Height)**
Structural Fill	0.05% of total wall height
¾" Crushed Stone	0.05% of total wall height
Foundation Backfill	0.10% of total wall height

If the proposed retaining wall is restricted against horizontal deflection or is not designed to accommodate the deflections in the table above, at-rest earth pressure should be used in the wall design.

We were unable to perform explorations on the upper part of the slope adjacent to Fore Street, however we anticipate that the slope up to Fore Street consists of existing fill soil.

6.1 Cast-in-Place Concrete Walls (Building Foundation Walls)

Soil properties presented in Section 6.0 above can be used in the cast-in-place concrete wall design. Assuming that the foundation design recommendations in Section 5.0 are followed, an allowable bearing pressure of 5,000 psf can be used proportion the footings. The following soil conditions can be assumed for the proposed foundation walls and footings:

- **Base of Footing:** ¾" crushed stone
- **Interior Backfill:** Structural Fill
- **Exterior Backfill:** Foundation Backfill or ¾" crushed stone

We recommend that retaining walls be backfilled with FB meeting the gradation requirements presented in Section 5.4 or with ¾" Crushed Stone. FB should be compacted to 95% of its maximum dry density in accordance with ASTM D1557. We recommend that underdrains be installed at the base of retaining walls to prevent the build-up of hydrostatic pressures. The underdrain should consist of 6" rigid perforated PVC surrounded by a minimum of 6 inches of crushed stone and filter fabric to prevent clogging from the migration of the fine soil particles in

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the foundation backfill soils. The underdrain pipes should outlet to a location where they will be free flowing.

Based on discussions with the design team, we understand that the retaining wall along the northern wall of the proposed building will consist of a cantilever retaining wall with a footing heel up to 7 feet beyond the outside edge of wall, extending towards the temporary shoring. At this time, we anticipate that steel sheeting will be used as the shoring system installed along Fore Street property boundary, directly adjacent to the outside edge of the cantilever footing heel. To provide additional uplift, overturning, and sliding resistance for the footing, we recommend that consideration be given to structurally attaching the heel of the footing to the steel sheet (which will be cut off at/near the top of footing elevation) or the solider pile in the event that soldier pile and lagging is used. The additional capacity of the buried portion of the sheet will potentially reduce the required length of the footing heel.

The following table can be used to design structural components of the cast-in-place concrete retaining walls with the equivalent fluid pressure method of soil. Note that these values assume a flat backslope or toeslope and will require a modification if there is a slope.

EQUIVALENT FLUID PRESSURE (EFP)			
SOIL	**ACTIVE EFP**	**AT-REST EFP**	**PASSIVE EFP**
¾" Crushed Stone	23 psf	38 psf	550 psf
Foundation Backfill	38 psf	60 psf	475 psf

A sliding coefficient of 0.58 can be used for cast-in-place concrete on ¾" crushed stone. Retaining walls should be designed to accommodate traffic and construction surcharge loads.

6.2 Temporary Shoring

We understand that temporary shoring will be required for the cut adjacent to Fore Street for the construction of the concrete retaining wall. The shoring will be required to retain heights of up to 19 feet. At this time, we understand that steel sheeting is the preference for the shoring system.

Due to the relatively shallow bedrock at the northeast corner of the building (approximately 16 feet below existing grade) and the exposed height of 19 feet, we anticipate that at least one row of bracing will be required for the steel sheeting system. We understand that soil anchors are being avoided if possible for the new project. Therefore, we anticipate that the sheets will be internally braced with concrete or sheet pile deadmen. The soil properties provided in

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Section 6.0 can be used to design the sheeting and deadmen system. We were unable to perform explorations on the upper part of the slope adjacent to Fore Street, however we anticipate that the slope up to Fore Street consists of existing fill soil.

In order to utilize full passive pressure for the deadmen design, we recommend that all soil backfill placed around the deadman consists of compacted Structural Fill. We further recommend that the shoring and deadmen design be made available to SGS for review.

7.0 Earthwork Considerations

All fill placed within the proposed building footprint should consist of Structural Fill (SF, see Section 5.6). Fill outside of the building footprint can consist of SF or Gravel Borrow (GB). The portion of GB passing the 3" sieve size should meet the following gradation requirements:

GRAVEL BORROW (GB)	
Sieve Size	**Percent finer**
¼ inch	0 to 70
No. 200	0 to 10.0

Reference: MDOT Specification 703.19, Gravel Borrow

The maximum GB particle size should be limited to 6 inches. GB should be placed in 6 to 12 inch lifts and should be compacted to a minimum of 95 percent of its maximum dry density, determined in accordance with ASTM D1557.

Vibrations are anticipated during construction of the ground improvement or pile foundation installation. The contractor should take the necessary precautions for monitoring vibrations and/or adjacent structures, as necessary based on the anticipated vibrations.

All existing foundation elements should be removed from their entirety from within proposed building footprints. Voids created by this removal should be backfilled with compacted Structural Fill or ¾" crushed stone.

The table below summarizes the OSHA general excavation guidelines for occupied excavations for the soils encountered in our geotechnical explorations. All permissible slopes below apply to soil above groundwater table:

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OSHA Excavation Slopes		
Soil	**OSHA Classification**	**Permissible Slope**
Existing Fill	Type C	1.5H:1V
Outwash Sand	Type C	1.5H:1V

Any excavations greater than 20 feet should be designed by a qualified Maine Licensed Professional Engineer.

We do not anticipate that the existing fill soil will meet the gradation requirements for Foundation Backfill (FB) or Structural Fill (SF).

In general, we do not anticipate a significant presence groundwater within footing excavations. If localized perched groundwater is encountered, dewatering may consist of shallow sumps at the base of the excavation. Diversion and control of surface water should be performed to prevent water flow from rain or snowmelt from entering the excavations.

Surface water should be redirected from excavation areas. Where softened, we recommend the subgrade at the base of the excavation be over-excavated and replaced with a minimum of 12 inches of Crushed Stone. Crushed Stone should be should be tamped to lock the stone structure together. Crushed Stone should meet the following gradation specification:

CRUSHED STONE ¾ INCH	
Sieve Size	**Percent finer**
1 inch	100
¾ inch	90 to 100
½ inch	20 to 55
⅜ inch	0 to 15
No. 4	0 to 5

Reference: MDOT Specification 703.13, Crushed Stone ¾-Inch (2014)

We recommend that a qualified geotechnical consultant be retained to monitor and test soil materials used during construction and confirm that soil conditions and construction methods are consistent with this report.

Urban fill containing ash, brick, and other debris was encountered in the borings performed at the site. SGS did not perform any environmental testing on the collected samples and this report does not constitute an environmental site assessment. However, to minimize the exposure of the construction workers, general public, and future occupants of the site to the urban fill we recommend that a Soil Management Plan (SMP) be prepared for the site to

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provide general guidelines on the excavation, relocation, covering, management, and disposal of the urban fill at the site.

8.0 Closure

Our recommendations are based on professional judgment and generally accepted principles of geotechnical engineering and project information provided by others. Some changes in subsurface conditions from those presented in this report may occur. Should these conditions or the proposed development differ from those described in this report, SGS should be notified so that we can re-evaluate our recommendations.

We highly recommend that all retaining wall designs be made available to SGS for review in order to verify that the design conditions are consist with the recommendations provided in this report.

It is recommended that this report be made available in its entirety to contractors for informational purposes and be incorporated in the construction Contract Documents. We recommend that SGS be retained to review final construction documents relevant to the recommendations in this report.

We appreciate the opportunity to serve you during this phase of your project. If there are any questions or additional information is required, please do not hesitate to call.

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APPENDIX A

EXPLORATION LOCATION PLAN

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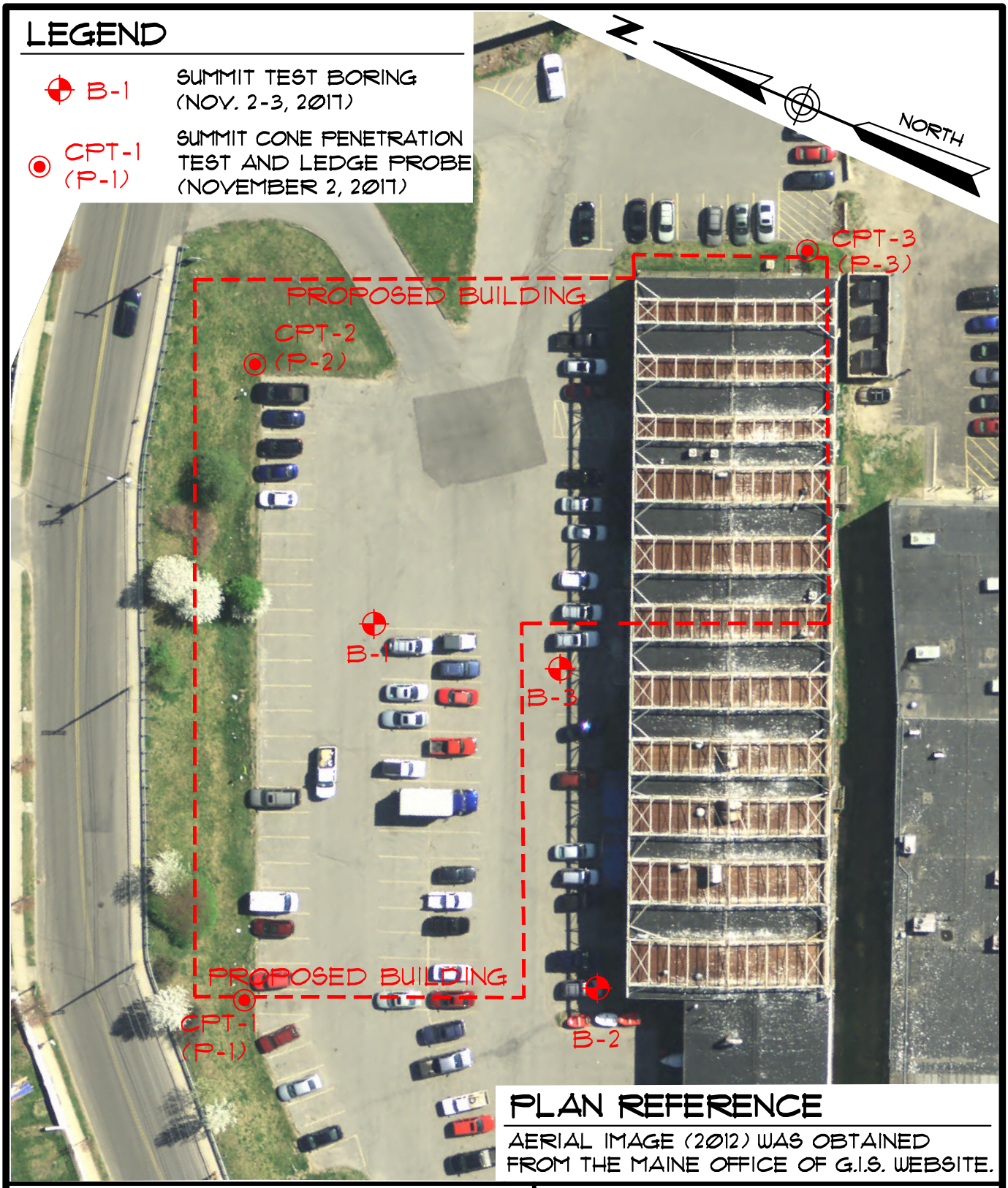
LEGEND

B-1 — SUMMIT TEST BORING (NOV. 2-3, 2017)

CPT-1 (P-1) — SUMMIT CONE PENETRATION TEST AND LEDGE PROBE (NOVEMBER 2, 2017)



PLAN REFERENCE

AERIAL IMAGE (2012) WAS OBTAINED FROM THE MAINE OFFICE OF G.I.S. WEBSITE.

EXPLORATION LOCATION PLAN
PROPOSED BUILDING

100 FORE STREET - PORTLAND, MAINE

PREPARED FOR

ARCHETYPE ARCHITECTS

DATE: 11-6-2017	DRAWN BY: KRF	CHECKED BY: WMP
JOB: 16063	SCALE: 1" = 50'	FILE: 16063 SKT

145 LISBON ST. - SUITE 701
LEWISTON, ME 04240
Tel.: (207) 576-3313

173 PLEASANT STREET
ROCKLAND, ME 04841
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APPENDIX B

EXPLORATION LOGS

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EXPLORATION COVER SHEET

The exploration logs are prepared by the geotechnical engineer from both field and laboratory data. Soil descriptions are based upon the Unified Soil Classification System (USCS) per ASTM D2487 and/or ASTM D2488 as applicable. Supplemental descriptive terms for estimated particle percentage, color, density, moisture condition, and bedrock may also be included to further describe conditions.

Drilling and Sampling Symbols:

SS = Split Spoon Sample
UT = Thin Wall Shelby Tube
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RW = Rotary Wash
SV = Shear Vane
PP = Pocket Penetrometer
RC = Rock Core Sample
FV = Field Vane Shear Test
PS = Concrete Punch Sample
Hyd = Hydraulic Advancement of Drilling Rods
Push = Direct Push of Drilling Rods
WOH = Weight of Hammer
WOR = Weight of Rod
PI = Plasticity Index
LL = Liquid Limit
W = Natural Water Content
USCS = Unified Soil Classification System
Su = Undrained Shear Strength
Su(r) = Remolded Shear Strength

Water Level Measurements:

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable groundwater levels. In impervious soils, the accurate determination of groundwater elevations may not be possible, even after several days of observations. Groundwater monitoring wells may be required to record accurate depths and fluctuation.

Gradation Description and Terminology:

Boulders:	Over 12 inches	Trace:	Less than 5%
Cobbles:	12 inches to 3 inches	Little:	5% to 15%
Gravel:	3 inches to No.4 sieve	Some:	15% to 30%
Sand:	No.4 to No. 200 sieve	Silty, Sandy, etc.:	Greater than 30%
Silt:	No. 200 sieve to 0.005 mm		
Clay:	less than 0.005 mm		

Density of Granular Soils and Consistency of Cohesive Soils:

CONSISTENCY OF COHESIVE SOILS		DENSITY OF GRANULAR SOILS	
SPT N-value blows/ft	**Consistency**	**SPT N-value blows/ft**	**Relative Density**
0 to 2	Very Soft	0 to 4	Very Loose
2 to 4	Soft	5 to 10	Loose
5 to 8	Firm	11 to 30	Compact
9 to 15	Stiff	31 to 50	Dense
16 to 30	Very Stiff	>50	Very Dense
>30	Hard		

SOIL BORING LOG

SUMMIT GEOENGINEERING SERVICES

Project:	Proposed Building	Boring #:	B-1
Location:	100 Fore Street	Project #:	16063
City, State:	Portland, Maine	Sheet:	1 of 1
		Chkd by:	

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	14.0 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Summit Staff:	M. Hardison, E.I.	Date started: 11/2/2017	Date Completed: 11/2/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	Open Hole	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
11/2/2017	8.3 ft.	5.7 ft. +/-	Measured in open hole, 3:00PM

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
						4" Pavement		PAVEMENT
1						Brown Gravelly SAND, trace to little Silt, trace brick		
	S-1	24/16	1 to 3	9		Black ASH, large brick fragments, little Sand, trace		
2				11		Gravel and Silt, humid, compact		FILL
				11				
3				7		Olive gray Silty SAND, little Gravel, trace black and		
	S-2	24/18	3 to 5	7		white Ash, trace Brick, compact, humid, SM		
4				8				
				5				
5				4		increasing white Ash content in bottom 6" of sample S-2		
	S-3	24/5	5 to 7	2		White ASH, little to some olive gray SAND, little fine		
6				2		Gravel and Silt, little black Ash, trace clinker, very loose,		
				1		humid		
7				2				
	S-4	24/8	7 to 9	2		Similar to above, moist, trace wood pieces		
8				1				
				1			▽ Groundwater	
9				2				
	S-5	24/8	9 to 11	1		Black ASH and clinker, little Sand and Silt, trace white		
10				2		Ash and brick, wet		
				1				
11				3				
	S-6	24/20	11 to 13	3		Similar to above, fibrous material, wet		
12				3	2.0'			
				6		Olive gray to brown Silty fine to coarse SAND, little		
13				9		to some fine Gravel, compact, wet, SM		OUTWASH SAND
	S-7	24/16	13 to 15	16		Similar to above		
14				16		Olive Silty CLAY, heavily mottled, stiff, wet, CL	PP = 7,500 psf	
				12		Brown Gravelly coarse SAND, wet, compact to dense,		
15				9		SP		
	S-8	24/10	15 to 17	6		Similar to above, little to some Gravel, trace Silt, SP		
16				9	-2.0'			
				12		Gray Gravelly SILT, little Sand, heavy mottling near		GLACIAL TILL
17				50/1"	-2.6'	spoon tip, dense, ML		
						End of Boring at 16.6 feet, Spoon Refusal		PROBABLE COBBLE/ BOULDER
18								
19								
20								
21								
22								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-2**

Project:	Proposed Building	Project #:	16063
Location:	100 Fore Street	Sheet:	1 of 2
City, State:	Portland, Maine	Chkd by:	

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	14.0 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Summit Staff:	M. Hardison, E.I.	Date started: 11/3/2017	Date Completed: 11/3/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	Open Hole	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
11/3/2017	9.0 ft.	5.0 ft. +/-	Observed on soil samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
						6" Pavement		PAVEMENT
1								
	S-1	24/16	1 to 3	6		Black medium to coarse SAND, little to some fine Gravel,		FILL
2				7		little Silt, trace brick fragments, humid, compact, SP-SM		
				8				
3				8				
	S-2	24/12	3 to 5	6		Olive brown fine to medium SAND, little to some Silt,		
4				3		frequent brick, coal/clinker, black Ash, and white Ash,		
				4		loose, humid, SM		
5				12				
	S-3	24/10	5 to 7	16		Similar to above		
6				12		Brown fine Gravelly fine to coarse SAND, little Silt,		
				10		Cobble pieces, humid, compact, SP-SM		
7				10				
	S-4	24/12	7 to 9	6		Similar to above, increasing Silt content, little to some		
8				5		Gravel, SM		
				4				
9				3			▽	
	S-5	24/18	9 to 11	2		Brown (with minor black staining) fine to coarse SAND,	Groundwater	
10				2		little Silt and fine Gravel, moist to wet, loose, SP-SM		
				2				
11				2				
	S-6	24/16	11 to 13	2		Similar to above, trace to little Silt, wet, very loose		
12				2				
				1				
13				3				
	S-7	24/14	13 to 15	2		Brown medium to coarse SAND, trace Silt and fine		
14				3		Gravel, loose, wet, SP		
				5	-0.5'			
15				15				
	S-8	24/24	15 to 17	14		Gray fine to medium SAND, little to some Gravel,		OUTWASH SAND
16				12		little Silt, compact to dense, SP-SM		
				16				
17				12				
				17		Advanced speartip probe below 17' depth, blows per		
18						foot shown (140lb hammer, 30" drop)		
				10				
19								
				34				
20								
				12				
21								
				11				
22								
				11				

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-2**

Project:	Proposed Building	Project #:	16063
Location:	100 Fore Street	Sheet:	2 of 2
City, State:	Portland, Maine	Chkd by:	

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	14.0 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Summit Staff:	M. Hardison, E.I.	Date started: 11/3/2017	Date Completed: 11/3/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	Open Hole	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
11/3/2017	9.0 ft.		Observed on soil samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23				11	-9.0'			OUTWASH SAND
24				18				GLACIAL TILL
25				23				
26				33				
27				25				
28				24				
29				26				
30				64				
31				56				
				40/5"	-17.3'			
32						End of Boring at 31.3 feet, Speartip Refusal		BEDROCK
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SOIL BORING LOG

SUMMIT GEOENGINEERING SERVICES

Project:	Proposed Building	Boring #:	B-3
Location:	100 Fore Street	Project #:	16063
City, State:	Portland, Maine	Sheet:	1 of 2
		Chkd by:	

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	14.0 ft.+/-
Driller:	C. Coolidge, P.E.	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Summit Staff:	M. Hardison, E.I.	Date started: 11/3/2017	Date Completed: 11/3/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method	Open Hole/Cased Wash	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
11/3/2017	9.0 ft.	5.0 ft. +/-	Observed on soil samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
						6" Pavement		PAVEMENT
1								
						Concrete encountered from 1.0 feet to 3.0 feet		
2						depth, augured through with solid stem augers		CONCRETE
3								
	S-1	24/14	3 to 5	4		Olive gray Silty SAND, little Gravel, trace Brick		
4				5		fragments, humid, compact, SM		
				9				
5				9				FILL
	S-2	24/8	5 to 7	5		Brown Gravelly fine to coarse SAND, little to some Silt,		
6				4		humid, compact, SP-SM		
				7				
7				4				
	S-3	24/8	7 to 9	2		Similar to above, Cobble pieces, little Silt, humid to		
8				4		moist (moist in spoon tip)		
				2				
9				1			▽	
	S-4	24/6	9 to 11	3		Dark brown fine to coarse SAND, little Gravel and Silt,	Groundwater	
10				3		wet, loose, SP-SM		
				5				
11				4				
	S-5	24/16	11 to 13	7		Similar to above, little to some Gravel, compact		
12				9				
				6				
13				4	1.0'			
	S-6	24/0	13 to 15	5		No recovery, likely running sands, wet		
14				3				
				3				OUTWASH SAND
15				3				
	S-7	24/10	15 to 17	7		Brown medium to coarse SAND, trace fine Gravel, trace		
16				7		Silt from 16' to 16.5' depth, wet, compact, SP		
				5				
17				2				
	S-8	24/12	17 to 19	1		Similar to above		
18				1				
				28		Gray Silty fine SAND, trace Gravel and Cobble fragments		
19				6		(angular), wet, dense, SM		
	S-9	24/12	19 to 21	6		Brown medium to coarse SAND, little fine Gravel and		
20				11		Silt, wet, compact, SP-SM		
				16		Gray Silty fine SAND, trace Gravel and Cobble		
21				6	-7.0'	fragments, trace Clay in spoon tip		
22						Drove casing and advanced roller cone below 21 feet		GLACIAL TILL

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: **B-3**

Project:	Proposed Building	Project #:	16063
Location:	100 Fore Street	Sheet:	2 of 2
City, State:	Portland, Maine	Chkd by:	

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	14.0 ft.+/-
Driller:	C. Coolidge, P.E.	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Summit Staff:	M. Hardison, E.I.	Date started: 11/3/2017	Date Completed: 11/3/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method	Open Hole/Cased Wash	Hammer:	140 lb
Hammer Style:	Auto	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
11/3/2017	9.0 ft.	5.0 ft. +/-	Observed on soil samples

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23								GLACIAL TILL
24								
25								
	S-10	24/20	25 to 27	8		Gray medium to coarse SAND, little fine Gravel and		
26				10		Silt, wet, compact, SP-SM		
				9				
27				12				
28								
29								
30								
	S-11	24/20	30 to 32	20		Similar to above, dense		
31				17				
				19				
32				14				
				PROBE		Advanced roller cone		
33								
34								
35								
36								
37								
				▼	-23.5'			
38						End of Boring at 37.5 feet, Roller Cone Refusal		BEDROCK
39								
40								
41								
42								
43								
44								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL PROBE LOG

Boring #: **P-1 (CPT-1)**

Project:	Proposed Building	Project #:	16063
Location:	100 Fore Street	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	16.0 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Summit Staff:	M. Hardison, E.I.	Date started: 11/2/2017	Date Completed: 11/2/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	N/A
Model:	AMS Power Probe	Diameter:	
Method:	Speartip	Hammer:	
Hammer Style:	Auto	Method:	

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/12"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
1				2		See CPT-1 Advanced speartip probe, blow per foot shown (140lb hammer, 30" drop)		FILL
2				8				
3				3				
4				5				
5				3				
6				4				
7				10	9.0'			
8				9				OUTWASH SAND
9				10				
10				17				
11				20				
12				37				
13				11				
14				12				
15				16				
16				16				
17				18				
18				14	-2.0'			
19				27				GLACIAL TILL
20				35				
21				16				
22				29				
				53				

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL PROBE LOG

Boring #: **P-1 (CPT-1)**

Project:	Proposed Building	Project #:	16063
Location:	100 Fore Street	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	16.0 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Summit Staff:	M. Hardison, E.I.	Date started: 11/2/2017	Date Completed: 11/2/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	N/A
Model:	AMS Power Probe	Diameter:	
Method:	Speartip	Hammer:	
Hammer Style:	Auto	Method:	

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/12"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23				53				
24				37				GLACIAL TILL
25				43				
26				56				
27				44				
28				25				
29				44				
30				39				
31				39				
32				34	-16.3'			
33						End of Probe at 32.3 feet, Speartip Refusal		BEDROCK
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL PROBE LOG

Boring #: **P-2 (CPT-2)**

Project:	Proposed Building	Project #:	16063
Location:	100 Fore Street	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	15.0 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Summit Staff:	M. Hardison, E.I.	Date started: 11/3/2017	Date Completed: 11/3/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	N/A
Model:	AMS Power Probe	Diameter:	
Method:	Speartip	Hammer:	
Hammer Style:	Auto	Method:	

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/12"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
1				3				
2				3		See CPT-2		FILL
3				5		Advanced speartip probe, blow per foot shown (140lb hammer, 30" drop)		
4				2				
5				2				
6				5				
7				3				
8				7				
9				5				
10				14	5.0'			
11				27				OUTWASH SAND
12				33	3.0'			
13				56				GLACIAL TILL
14				65				
15				62				
16				75	-1.0'			
17						End of Probe at 16.0 feet, Speartip Refusal		BEDROCK
18								
19								
20								
21								
22								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL PROBE LOG

Boring #: **P-3 (CPT-3)**

Project:	Proposed Building	Project #:	16063
Location:	100 Fore Street	Sheet:	1 of 2
City, State:	Portland, Maine	Chkd by:	

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	13.0 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Summit Staff:	M. Hardison, E.I.	Date started: 11/2/2017	Date Completed: 11/2/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	N/A
Model:	AMS Power Probe	Diameter:	
Method:	Speartip	Hammer:	
Hammer Style:	Auto	Method:	

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/12"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
1				3		See CPT-3		FILL
2				2				
3				5		Advanced speartip probe, blow per foot shown (140lb hammer, 30" drop)		
4				10	9.0'			
5				34				OUTWASH SAND
6				19				
7				22				
8				15				
9				8				
10				11				
11				11				
12				11				
13				13				
14				23				
15				15				
16				11				
17				5				
18				6				
19				7	-6.0'			
20				17				GLACIAL TILL
21				20				
22				10				
				22				

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL PROBE LOG

Boring #: **P-3 (CPT-3)**

Project:	Proposed Building	Project #:	16063
Location:	100 Fore Street	Sheet:	2 of 2
City, State:	Portland, Maine	Chkd by:	

Drilling Co:	Summit Geoengineering Services, Inc.	Boring Elevation:	13.0 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Summit Staff:	M. Hardison, E.I.	Date started: 11/2/2017	Date Completed: 11/2/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	N/A
Model:	AMS Power Probe	Diameter:	
Method:	Speartip	Hammer:	
Hammer Style:	Auto	Method:	

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/12"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23								
				25				
24								
				30				
25								
				15				
26								
				23				
27								
				31				
28								
				32				
29								
				32				GLACIAL TILL
30								
				29				
31								
				30				
32								
				38				
33								
				26				
34								
				30				
35								
				30				
36								
				37				
37								
				62				
38								
				39				
39								
				25				
40								
				36				
41								
				32				
42								
				36				
43								
				35				
44								
				40				
45					-32.0'			
						End of Probe at 45.0 feet, Speartip Refusal		BEDROCK

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

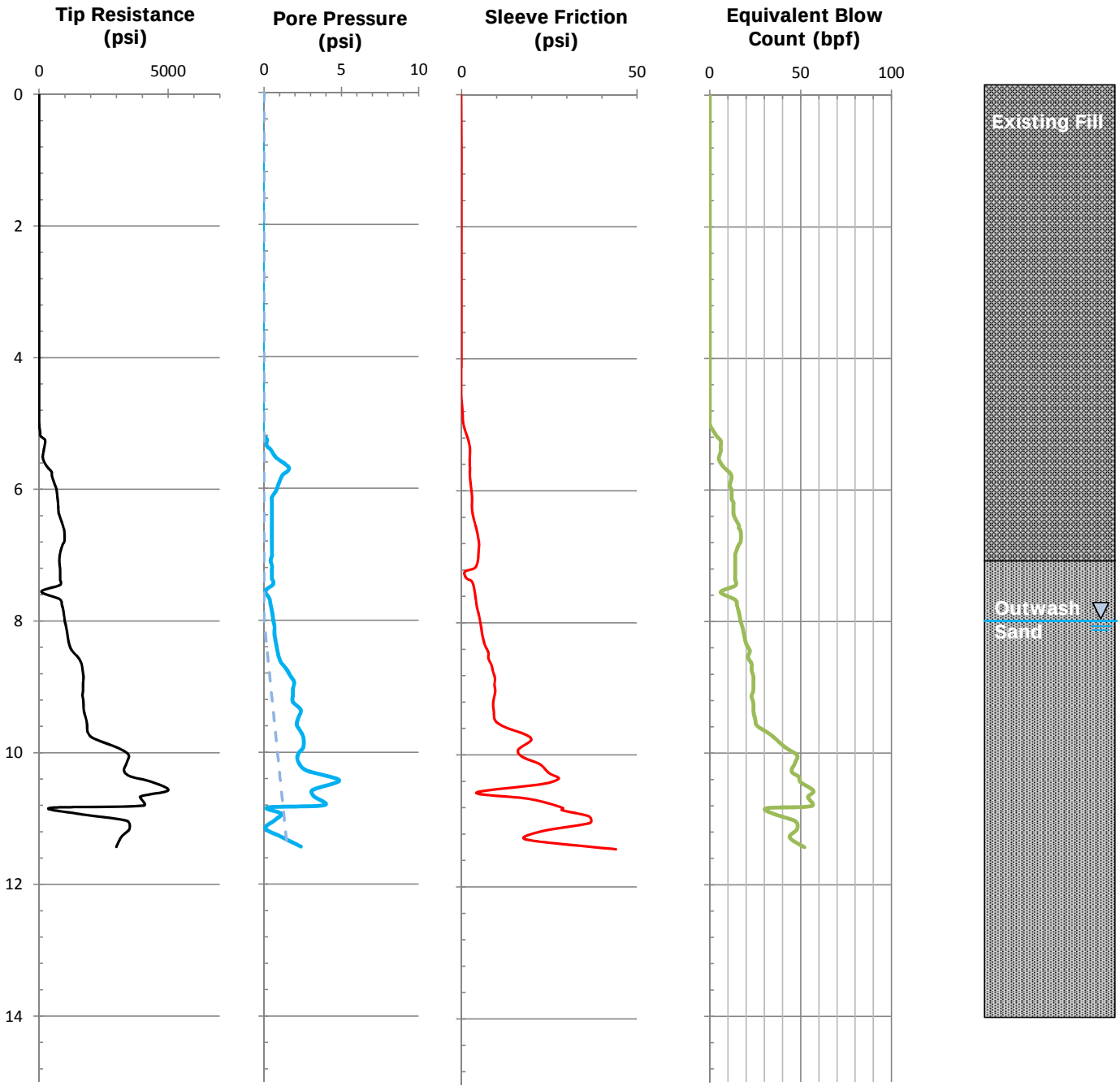
Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

PIEZOCONE PENETRATION LOG

Project:	Proposed Building	Test Number:	CPT-1
Location:	100 Fore Street	Sheet:	1 of 1
City, State	Portland, Maine	Project Number:	16063
		Method:	ASTM D5778
		Weather:	50° Sunny

Cone ID:	Vertek #4544.101	Test Elevation:	16.0 ft. +/-
Cone Type:	VTK 5 Ton Digital Cone	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Piezocone:	Silicone Single Filter	Date started:	11/2/2017 Date Completed: 11/2/2017
Push Rig:	AMS Power Probe 9500 VTR	ESTIMATED GROUND WATER DEPTH	
Anchor Style:	Single Point Anchor	Date / Depth / Elevation / Reference	
Performed By:	Craig Coolidge, P.E.	11/2/2017 / 8.0 feet / 8.0 ft. +/- / Inferred from pore pressure readings	



NOTES:

Soil Profile based on interpretation of CPT measurements and nearby borings

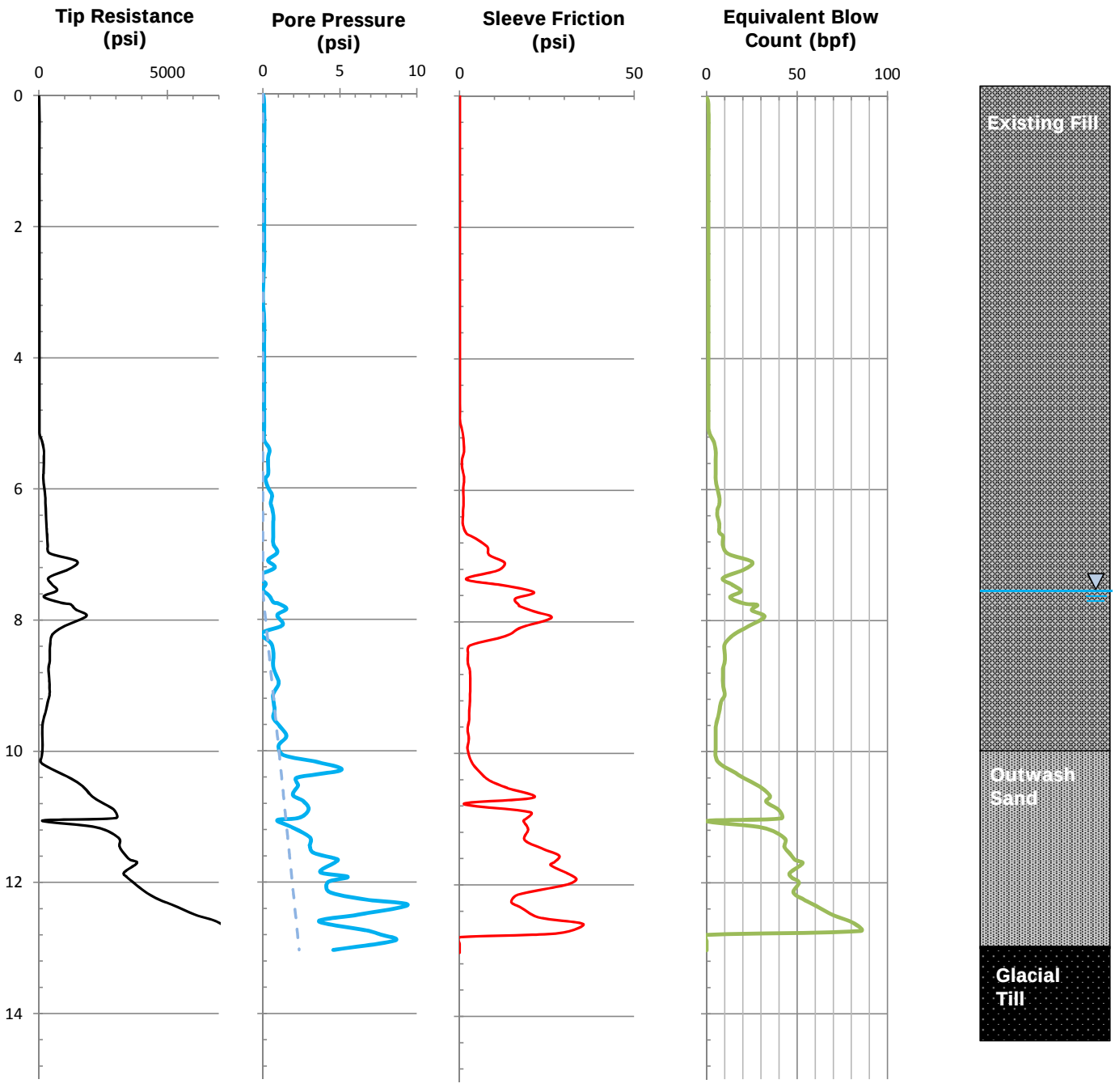
Abrupt push refusal encountered at depth of 11.4 feet in likely dense sand layer

SUMMIT GEOENGINEERING SERVICES

PIEZOCONE PENETRATION LOG

Test Number:	CPT-2		
Sheet:	1 of 1		
Project:	Proposed Building	Project Number:	16063
Location:	100 Fore Street	Method:	ASTM D5778
City, State	Portland, Maine	Weather:	50° Sunny

Cone ID:	Vertek #4544.101	Test Elevation:	15.0 ft. +/-
Cone Type:	VTK 5 Ton Digital Cone	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Piezocone:	Silicone Single Filter	Date started:	11/2/2017 Date Completed: 11/2/2017
Push Rig:	AMS Power Probe 9500 VTR	ESTIMATED GROUND WATER DEPTH	
Anchor Style:	Single Point Anchor	Date / Depth / Elevation / Reference	
Performed By:	Craig Coolidge, P.E.	11/2/2017 / 7.6 feet / 7.0 ft. +/- / Inferred from pore pressure readings	



NOTES:

Soil Profile based on interpretation of CPT measurements and nearby borings

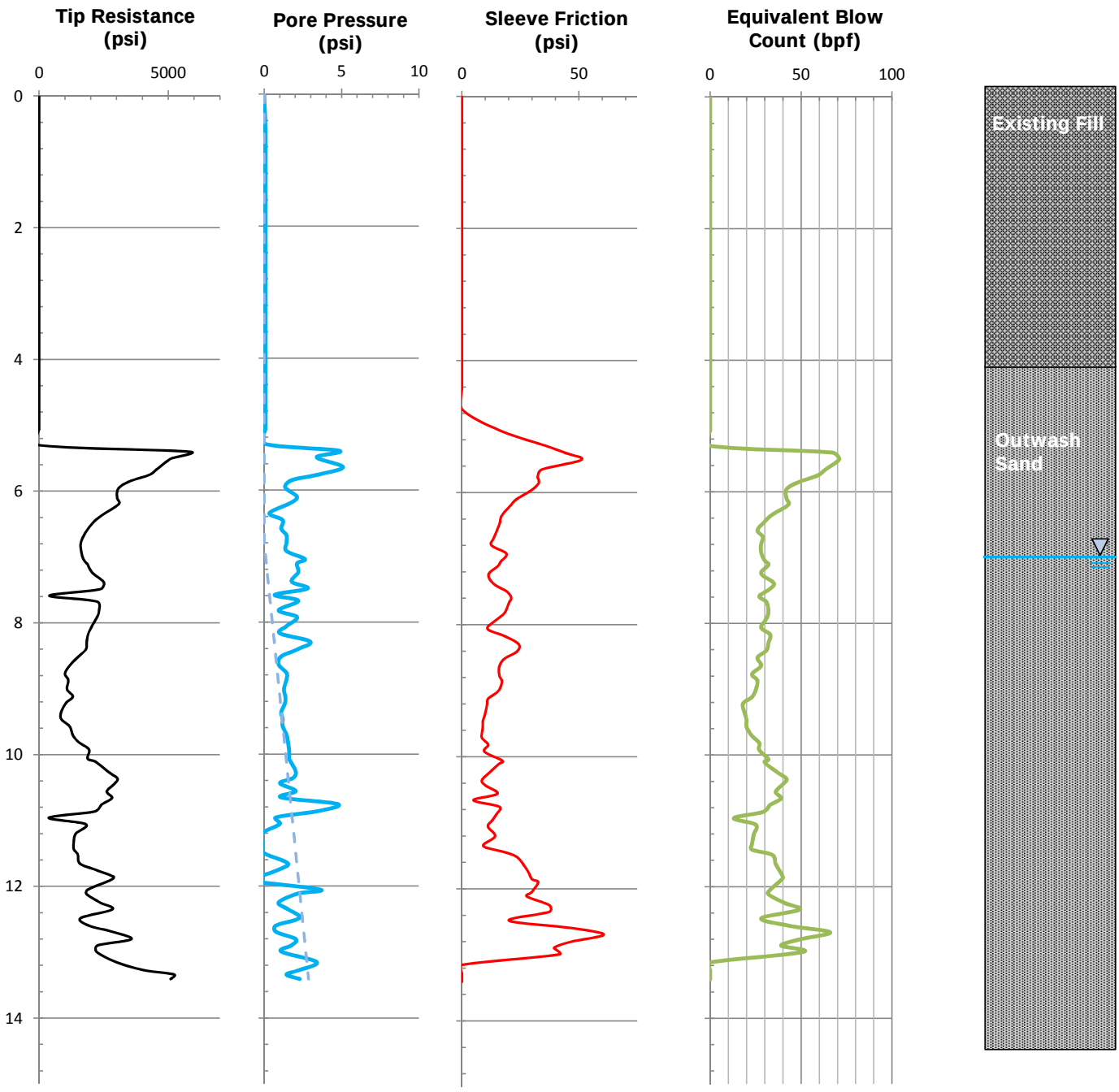
Abrupt push refusal encountered at depth of 13.0 feet in likely dense glacial till

SUMMIT GEOENGINEERING SERVICES

PIEZOCONE PENETRATION LOG

Test Number:	CPT-3		
Sheet:	1 of 1		
Project:	Proposed Building	Project Number:	16063
Location:	100 Fore Street	Method:	ASTM D5778
City, State	Portland, Maine	Weather:	50° Sunny

Cone ID:	Vertek #4544.101	Test Elevation:	13.0 ft. +/-
Cone Type:	VTK 5 Ton Digital Cone	Reference:	"Topographic Survey - 100 Fore Street" by Titcomb Associates dated Dec 4., 2017
Piezocone:	Silicone Single Filter	Date started:	11/2/2017 Date Completed: 11/2/2017
Push Rig:	AMS Power Probe 9500 VTR	ESTIMATED GROUND WATER DEPTH	
Anchor Style:	Single Point Anchor	Date / Depth / Elevation / Reference	
Performed By:	Craig Coolidge, P.E.	11/2/2017 / 6.8 feet / 6.2 ft. +/- / Inferred from pore pressure readings	



NOTES:

Soil Profile based on interpretation of CPT measurements and nearby borings

Abrupt push refusal encountered at depth of 13.4 feet in likely dense sand layer

GENERAL APPLICATION DOCUMENT

TECHNICAL CAPABILITY

The applicant has retained a highly-qualified team of professionals to undertake planning, permitting and design tasks on this project. Services will be provided by the following companies and their respective team leaders:

Civil Engineer	Stephen Bushey, P.E. Stantec 482 Payne Road Scarborough, ME 04074 (207) 887-3478 – Work (207) 883-3355 – Fax stephen.bushey@stantec.com
Architect	Bill Hopkins Archetype, PA 48 Wharf Street Portland, ME 04101 (207) 772-6022 – Work (207) 772-4056 – Fax hopkins@archetypepa.com
Surveyor	John Swan Owen Haskell, Inc. 390 US Route 1, Unit 10 Falmouth, ME 04105 (207) 774-0424 – Work (207) 774-0511 – Fax jswan@ownehaskell.com
Landscape Architect	Nick Aceto, PLA ASLA ALA Landscape Architecture (207) 221-3390 – Work na@acetola.com
Traffic Engineer	Bill Bray Traffic Solutions 235 Bancroft Street Portland, ME 04102 207.774.3603 trafficsolutions@maine.rr.com
Geotechnical Consultant	William Peterlein, P.E. Summit Geoengineering Services 145 Lisbon Street, Suite 601 Lewiston, ME 04240 (207) 576-3313 – Work bpeterlein@summitgeoeng.com
Electrical Engineer	ES Boulos 45 Bradley Drive Westbrook, Maine 04092 207.464.3706 Attn: Bob Goulet Bgoulet@Esboulos.Com

The team of consultants retained has expertise and experience in the design of similar commercial projects. Resumes of key personnel for development team can be provided upon request.

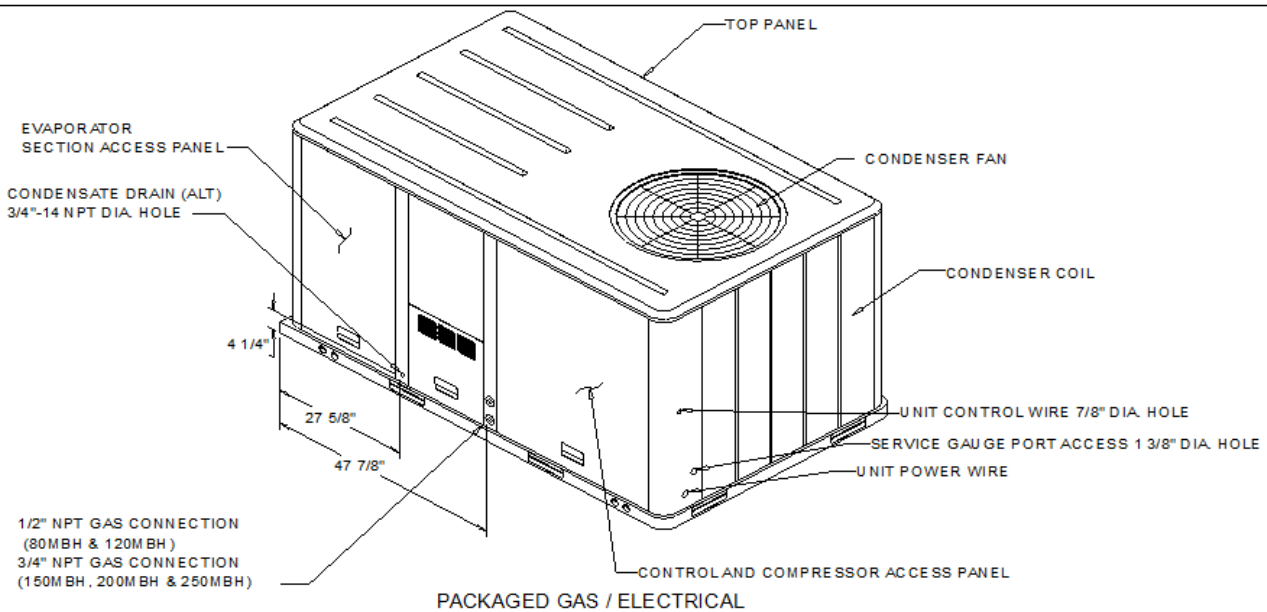
GENERAL APPLICATION DOCUMENT

WAIVER REQUESTS
UPDATED DECEMBER 18, 2018

The Accompanying Waiver Table provides a description of the applicable waiver requests and supporting evidence for these requests.

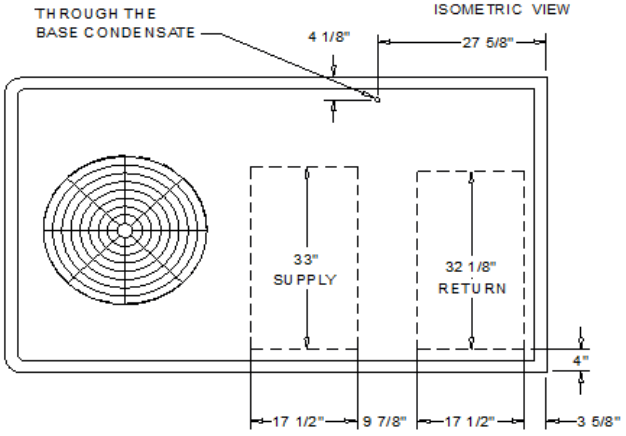
Standard to be Waived: Cite Ordinance or Technical Manual Standard	**Cite Standard Language:** Cite specific language of applicable Ordinance or Technical Manual Standard	**Waiver Being Sought:** Describe waiver being sought. Ex. – We are requesting a two-way parking lot drive aisle width of 20'.	**Justification for Waiver:** Address specific waiver criteria, if applicable, and document reasons for the waiver request.
Technical Standards – Section 1. Transportation Systems and Street Design Standards	*Section 1.7.2.7 – Location and Spacing of Driveways: The location and spacing of driveways shall be determined as follows: Along local streets, access driveways to corner lots shall be located a minimum of thirty-five (35) feet from the intersection of the projection of right-of-way lines to the center line of the driveway, except as provided hereinafter.*	The applicant is requesting a waiver to add a driveway separation of 33 feet.	The location of the P2 parking garage deck must align with the structural building columns and thus a waiver to allow a 2' reduction in separation distances is requested.
Technical Standards – Section 5. Portland Stormwater Management Standards and MaineDEP Chapter 500 Stormwater Management	*Flooding Standards: : Subcatchment plans with flow paths, full hydrology computations/model output of pre- and post-development conditions, summary of pre- and post-development flowrates, and a written request for waiver with rationale for waiver as noted in Section 5.II.F. (as applicable)*	The applicant is requesting a waiver for the flooding standard requirements.	The project will discharge stormwater runoff to a new 60" storm drain pipe that will discharge directly to the Fore River which is a tidal waterbody.

14-270 Conditional Uses *(a) 2. Parking*	*b. All structured parking, including multi-level parking garages shall meet the applicable conditions outlined below.* *ii. Waivers: the planning board may waive the requirement for first floor mixed use upon demonstration that the project meets one or more of the criteria listed under provisions a, b, and c below.* *Where the board allows a waiver of first floor mixed use, garages shall display architecture that enhances the pedestrian experience and disguises the parking use to the extent possible.* *c. Where the applicant can demonstrate to the satisfaction of the Planning Board that a market for first floor mixed uses currently does not exist, the Planning Board may grant a waiver of this condition, provided that the structure of the garage is designed to accommodate retail and or mixed uses in the future.*	The zoning in B-6 requires that parking garages incorporate first floor mixed-use along all street frontages but this requirement is followed by waivers that can be requested. One of these allows the request to set back the garage 20' from the street providing the potential for a future build-out of retail or mixed-use. We are requesting this waiver for a portion of the project along Fore Street.	Our proposal is to bookend the Fore Street façade with retail/mixed-use opportunities and then hold back the parking level 20' in between these elements are create an outdoor usable streetscape. By starting with the book ends it can be determined if retail and mixed-use will be viable in this location as it is not the existing fabric of the surrounding area. We believe the project will offer more to the public streetscape if it has well-designed exterior spaces than if it ends up with a long run of empty mixed-use spaces. If the bookends prove in time to be successful the remaining space could be built out incrementally with sensitivity to maintaining nice outdoor spaces in between. The same owner of this project is the owner of the WEX building and the Gateway Garage located nearby and both include retail along the public streets. These spaces have been a good indicator of the viability of mix-use/retail in the area. The spaces have been difficult to fill despite being closer to the downtown commercial zone than the proposed spaces for the 100 Fore Street project. WEX is located along the connection from the public trail system along the water to downtown giving it high levels of foot traffic and it is across the street from the cruise ship terminal suggesting if it has difficulties filling the spaces, 100 Fore would have an even harder time. The area that both WEX and 100 Fore are located in is currently developing quickly and several years from now the viability of mixed-use along the streets may be very different from today, especially if projects such as 58 Fore move forward and by following the rules of the waiver with the setback, the project can then adapt accordingly.



PACKAGED GAS / ELECTRICAL

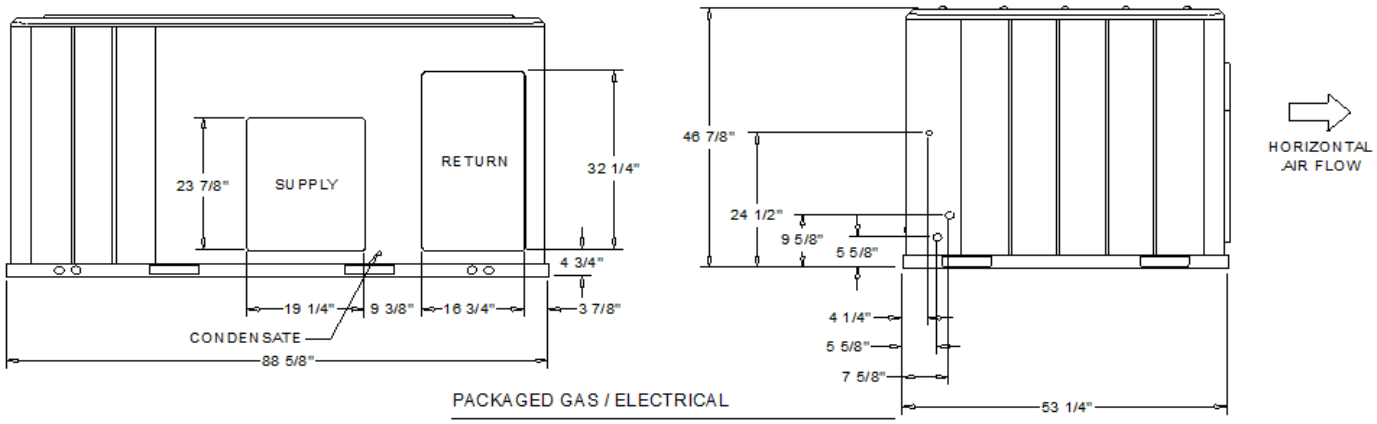
ISOMETRIC VIEW



NOTES:
1. THRU -THE -BASE ELECTRICAL IS NOT STANDARD ON ALL UNITS.
2. VERIFY ALL DIMENSIONS WITH INSTALLER DOCUMENTS BEFORE INSTALLATION.

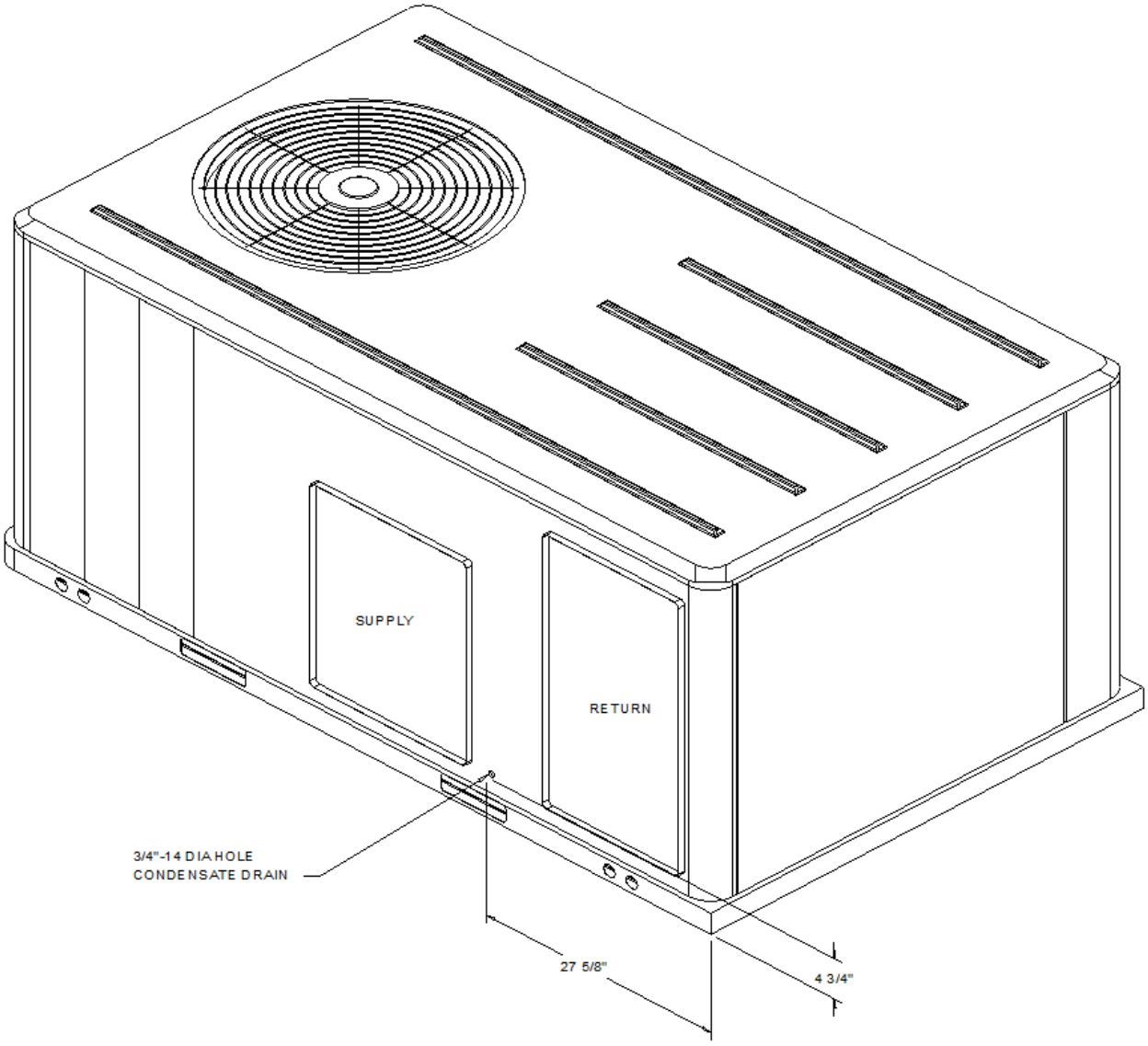
PLAN VIEW UNIT

DIMENSION DRAWING



PACKAGED GAS / ELECTRICAL

DIMENSION DRAWING



ISOMETRIC-PACKAGED COOLING

ELECTRICAL / GENERAL DATA

GENERAL (2)(4)(6)

Model:	YHC074F	Oversized Motor
Unit Operating Voltage:	414-506	MCA:
Unit Primary Voltage:	460	MFS:
Unit Secondary Voltage	--	MCB:
Unit Hertz:	60	
Unit Phase:	3	
EER		
Standard Motor		Field Installed Oversized Motor
MCA:	18.7	MCA:
MFS:	25.0	MFS:
MCB:	25.0	MCB:

HEATING PERFORMANCE

HEATING - GENERAL DATA

Heating Model:	Low
Heating Input (BTU):	80,000
Heating Output (BTU):	64,800
No. Burners:	3
No. Stages	1
Gas Inlet Pressure	
Natural Gas (Min/Max):	4.5/14.0
LP (Min/Max)	11.0/14.0
Gas Pipe Connection Size:	1/2"

INDOOR MOTOR

Standard Motor		Oversized Motor	Field Installed Oversized Motor
Number:	1	Number:	Number:
Horsepower:	2.75	Horsepower:	Horsepower:
Motor Speed (RPM):	--	Motor Speed (RPM):	Motor Speed (RPM):
Phase	3	Phase	Phase
Full Load Amps:	4.3	Full Load Amps:	Full Load Amps:
Locked Rotor Amps:	--	Locked Rotor Amps:	Locked Rotor Amps:

COMPRESSOR Circuit 1/2

Number:	1
Horsepower:	5.0/2.0
Phase:	3
Rated Load Amps:	6.8/3.5
Locked Rotor Amps:	41.0/28.0

OUTDOOR MOTOR

Number:	1
Horsepower:	0.7
Motor Speed (RPM):	1100
Phase:	1
Full Load Amps:	2.4
Locked Rotor Amps:	6.6

POWER EXHAUST ACCESSORY (3)

(Field Installed Power Exhaust)

Phase:	
Horsepower:	
Motor Speed (RPM):	
Full Load Amps:	
Locked Rotor Amps:	

FILTERS

Type:	Throwaway
Furnished:	Yes
Number	4
Recommended	20"x25"x2"

REFRIGERANT (2)

Type	R-410
Factory Charge	
Circuit #1	5.8 lb
Circuit #2	4.1 lb

NOTES:

1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value does not include Power Exhaust Accessory.
4. Value includes oversized motor.
5. Value does not include Power Exhaust Accessory.
6. EER is rated at AHRI conditions and in accordance with DOE test procedures.

ELECTRICAL / GENERAL DATA

GENERAL (2)(4)(6)

		Oversized Motor	
Model:	YHC092F		
Unit Operating Voltage:	414-506	MCA:	N/A
Unit Primary Voltage:	460	MFS:	N/A
Unit Secondary Voltage	--	MCB:	N/A
Unit Hertz:	60		
Unit Phase:	3		

EER

Standard Motor		Field Installed Oversized Motor	
MCA:	20.7	MCA:	N/A
MFS:	25.0	MFS:	N/A
MCB:	25.0	MCB:	N/A

HEATING PERFORMANCE

HEATING - GENERAL DATA

Heating Model:	High
Heating Input (BTU):	200,000/140,000
Heating Output (BTU):	160,000/112,000
No. Burners:	4
No. Stages	2

Gas Inlet Pressure

Natural Gas (Min/Max):	4.5/14
LP (Min/Max)	11.0/14.0
Gas Pipe Connection Size:	3/4"

INDOOR MOTOR

Standard Motor		Oversized Motor		Field Installed Oversized Motor	
Number:	1	Number:	N/A	Number:	N/A
Horsepower:	2.75	Horsepower:	N/A	Horsepower:	N/A
Motor Speed (RPM):	--	Motor Speed (RPM):	N/A	Motor Speed (RPM):	N/A
Phase	3	Phase	N/A	Phase	N/A
Full Load Amps:	3.6	Full Load Amps:	N/A	Full Load Amps:	N/A
Locked Rotor Amps:	--	Locked Rotor Amps:	N/A	Locked Rotor Amps:	N/A

COMPRESSOR Circuit 1/2

Number:	2
Horsepower:	4.1/2.4
Phase:	3
Rated Load Amps:	7.1/4.7
Locked Rotor Amps:	52.0/38.0

OUTDOOR MOTOR

Number:	1
Horsepower:	0.75
Motor Speed (RPM):	1100
Phase:	1
Full Load Amps:	2.8
Locked Rotor Amps:	6.2

POWER EXHAUST ACCESSORY (3)

(Field Installed Power Exhaust)

Phase:	N/A
Horsepower:	N/A
Motor Speed (RPM):	N/A
Full Load Amps:	N/A
Locked Rotor Amps:	N/A

FILTERS

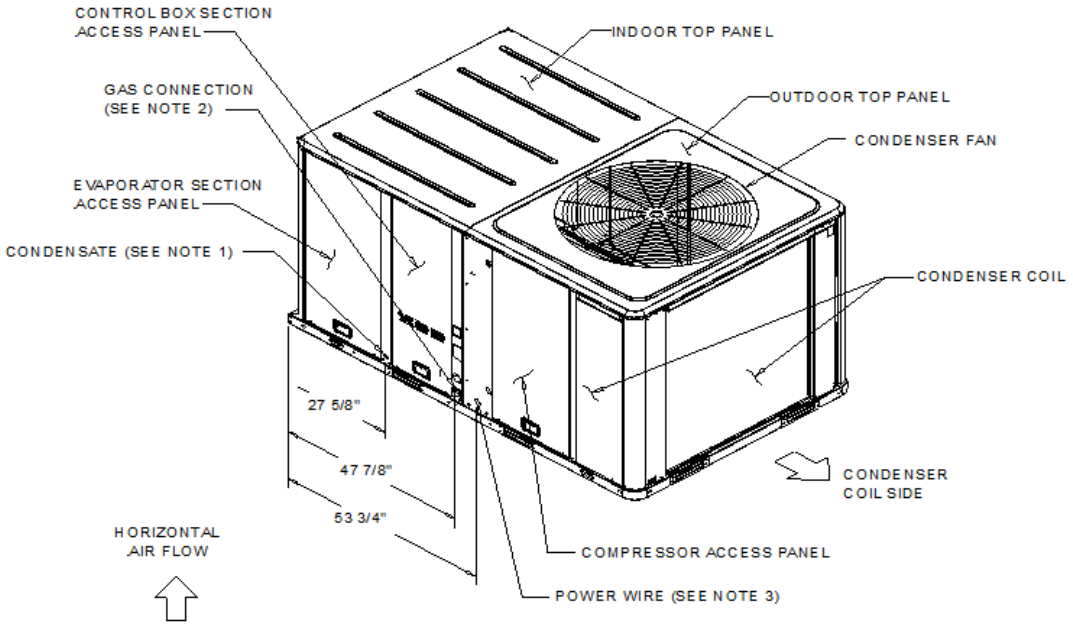
Type:	Throwaway
Furnished:	Yes
Number	4
Recommended	20"x25"x2"

REFRIGERANT (2)

Type	R-410
Factory Charge	
Circuit #1	6.2 lb
Circuit #2	4.3 lb

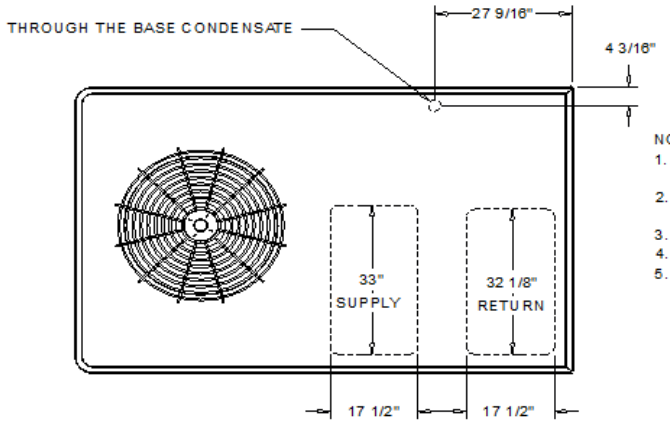
NOTES:

1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value does not include Power Exhaust Accessory.
4. Value includes oversized motor.
5. Value does not include Power Exhaust Accessory.
6. EER is rated at AHRI conditions and in accordance with DOE test procedures.



PACKAGED GAS / ELECTRICAL

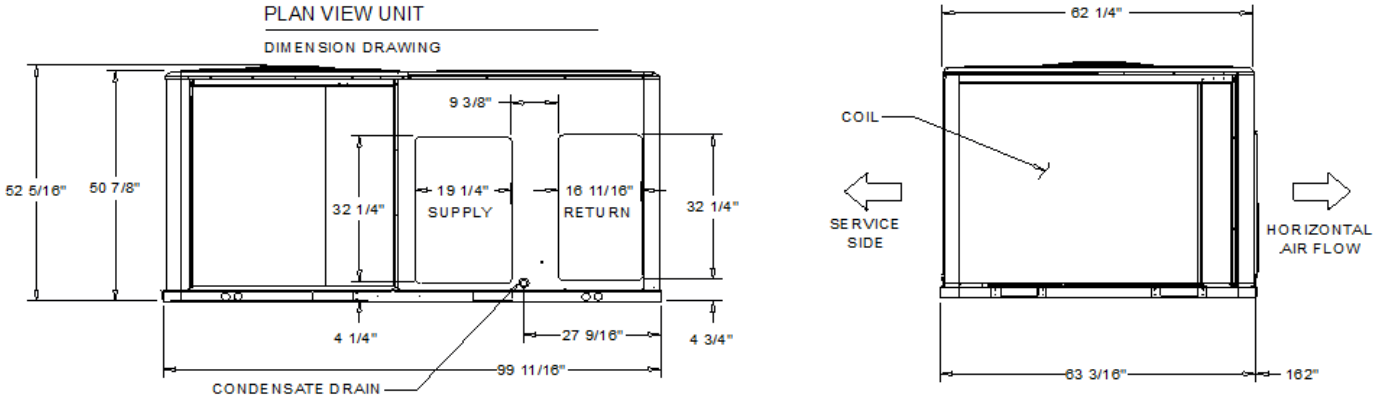
ISOMETRIC VIEW



NOTES:
1. ALTERNATE CONDENSATE DRAIN CONNECTION 3/4" - 14 NPT DIA. HOLE
2. 1/2" NPT GAS CONNECTION (80 mbh, 120 mbh) ; 3/4" NPT GAS CONNECTION (150mbh, 200mbh, 250mbh)
3. UNIT POWER WIRE 1 3/8" DIA. HOLE.
4. THRU -THE -BASE ELECTRICAL AND GAS IS NOT STANDARD ON ALL UNITS.
5. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION

PLAN VIEW UNIT

DIMENSION DRAWING



PACKAGED GAS / ELECTRICAL

DIMENSION DRAWING

ELECTRICAL / GENERAL DATA

GENERAL (2)(4)(6)

		Oversized Motor	
Model:	YHC120F		
Unit Operating Voltage:	414-506	MCA:	N/A
Unit Primary Voltage:	460	MFS:	N/A
Unit Secondary Voltage	--	MCB:	N/A
Unit Hertz:	60		
Unit Phase:	3		

EER

Standard Motor		Field Installed Oversized Motor	
MCA:	21.9	MCA:	N/A
MFS:	30.0	MFS:	N/A
MCB:	30.0	MCB:	N/A

HEATING PERFORMANCE

HEATING - GENERAL DATA

Heating Model:	Low
Heating Input (BTU):	150,000/105,000
Heating Output (BTU):	120,000/84,000
No. Burners:	3
No. Stages	2

Gas Inlet Pressure

Natural Gas (Min/Max):	4.5/14
LP (Min/Max)	10.0/14.0
Gas Pipe Connection Size:	3/4"

INDOOR MOTOR

Standard Motor		Oversized Motor		Field Installed Oversized Motor	
Number:	1	Number:	N/A	Number:	N/A
Horsepower:	2.75	Horsepower:	N/A	Horsepower:	N/A
Motor Speed (RPM):	--	Motor Speed (RPM):	N/A	Motor Speed (RPM):	N/A
Phase	3	Phase	N/A	Phase	N/A
Full Load Amps:	4.3	Full Load Amps:	N/A	Full Load Amps:	N/A
Locked Rotor Amps:	--	Locked Rotor Amps:	N/A	Locked Rotor Amps:	N/A

COMPRESSOR Circuit 1/2

Number:	2
Horsepower:	5.1/2.7
Phase:	3
Rated Load Amps:	8.2/5.8
Locked Rotor Amps:	66.0/38.0

OUTDOOR MOTOR

Number:	1
Horsepower:	0.75
Motor Speed (RPM):	1100
Phase:	3
Full Load Amps:	1.5
Locked Rotor Amps:	4.8

POWER EXHAUST ACCESSORY (3)

(Field Installed Power Exhaust)

Phase:	N/A
Horsepower:	N/A
Motor Speed (RPM):	N/A
Full Load Amps:	N/A
Locked Rotor Amps:	N/A

FILTERS

Type:	Throwaway
Furnished:	Yes
Number	3 / 2
Recommended	20"x25"x2"
	20"x30"x2"

REFRIGERANT (2)

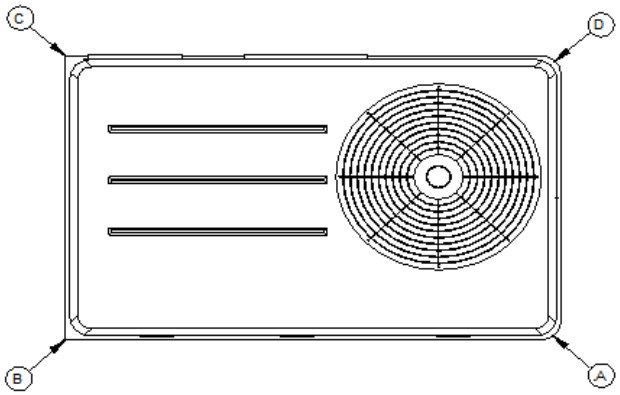
Type	R-410

Factory Charge

Circuit #1	8.0 lb
Circuit #2	5.0 lb

NOTES:

1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value does not include Power Exhaust Accessory.
4. Value includes oversized motor.
5. Value does not include Power Exhaust Accessory.
6. EER is rated at AHRI conditions and in accordance with DOE test procedures.



PACKAGED GAS / ELECTRICAL

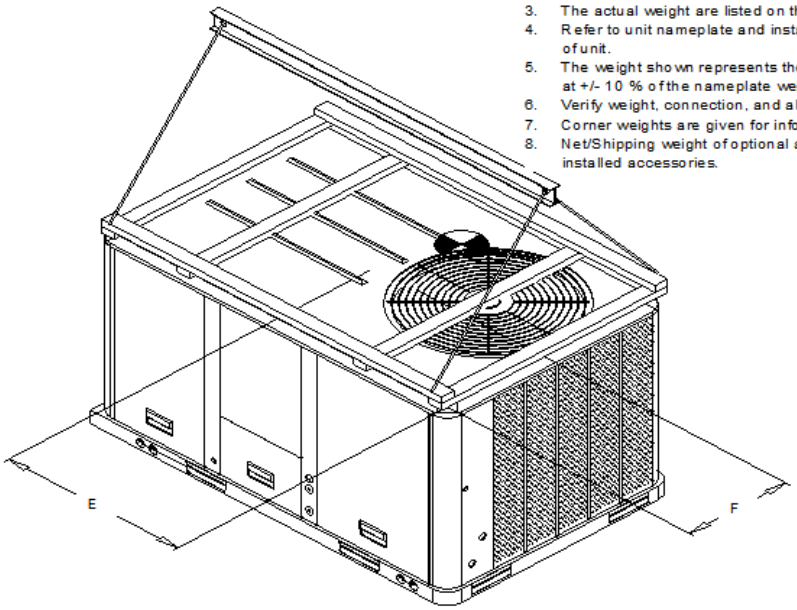
CORNER WEIGHT

INSTALLED ACCESSORIES NET WEIGHT DATA

ACCESSORY	WEIGHTS
ECONOMIZER	93.0 lb
MOTORIZED OUTSIDE AIR DAMPER	
MANUAL OUTSIDE AIR DAMPER	
BAROMETRIC RELIEF	
OVERSIZED MOTOR	
BELT DRIVE MOTOR	
POWER EXHAUST	
THROUGHT THE BASE ELECTRICAL/GAS (FIOPS)	
UNIT MOUNTED CIRCUIT BREAKER (FIOPS)	
UNIT MOUNTED DISCONNECT (FIOPS)	
POWERED CONVENIENCE OUTLET (FIOPS)	
HINGED DOORS (FIOPS)	12.0 lb
HAIL GUARD	
SMOKE DETECTOR, SUPPLY / RETURN	
NOVAR CONTROL	
STAINLESS STEEL HEAT EXCHANGER	6.0 lb
REHEAT	
ROOF CURB	

BASIC UNIT WEIGHTS		CORNER WEIGHTS				CENTER OF GRAVITIY	
SHIPPING	NET	(A)	334.0 lb	(C)	248.0 lb	(E) LENGHT	(F) WIDTH
1114.0 lb	1016.0 lb	(B)	231.0 lb	(D)	202.0 lb	41"	23"

NOTE:
1. All weights are approximate.
2. Weights for options that are not list refer to Installation guide.
3. The actual weight are listed on the unit nameplate.
4. Refer to unit nameplate and installation guide for weights before scheduling transportation and installation of unit.
5. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10 % of the nameplate weight. .
6. Verify weight, connection, and all dimension with installer documents before installation.
7. Corner weights are given for information only.
8. Net/Shipping weight of optional accessories should be added to unit weight when ordering factory or field installed accessories.



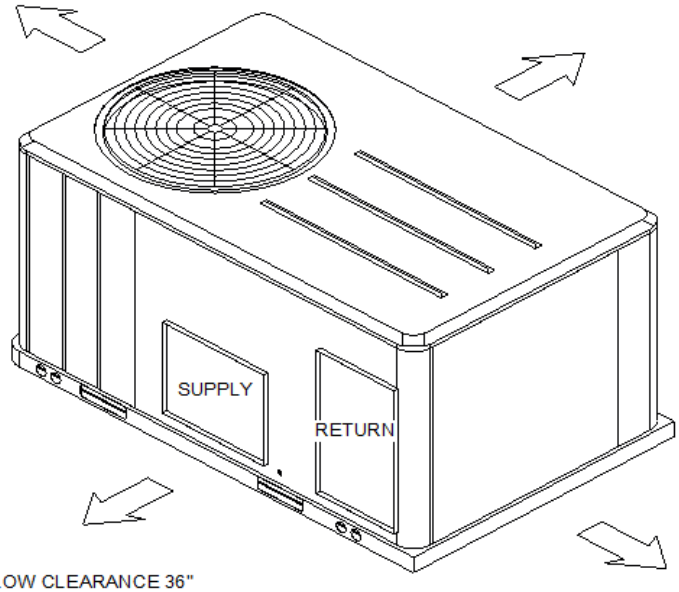
PACKAGED GAS / ELECTRICAL

RIGGING AND CENTER OF GRAVITY

CLEARANCE FROM TOP OF UNIT 72"

CLEARANCE 36"

CLEARANCE 48"



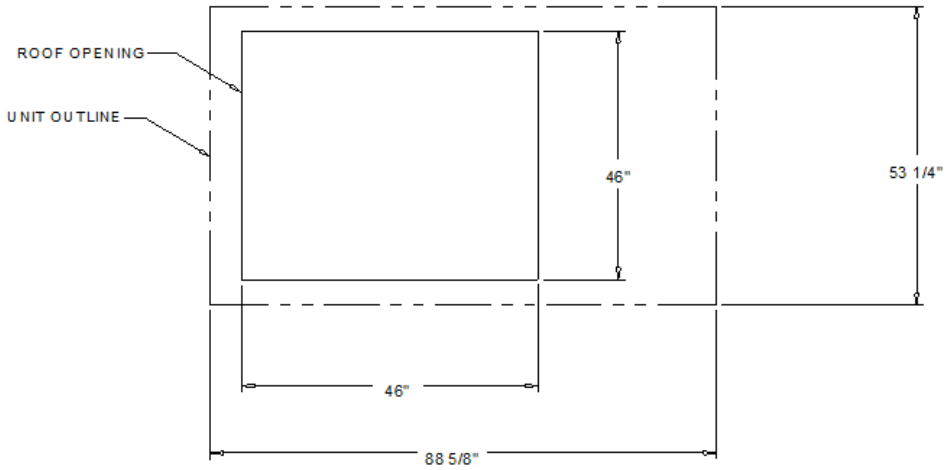
DOWNFLOW CLEARANCE 36"

HORIZONTAL CLEARANCE 18"

CLEARANCE 36"

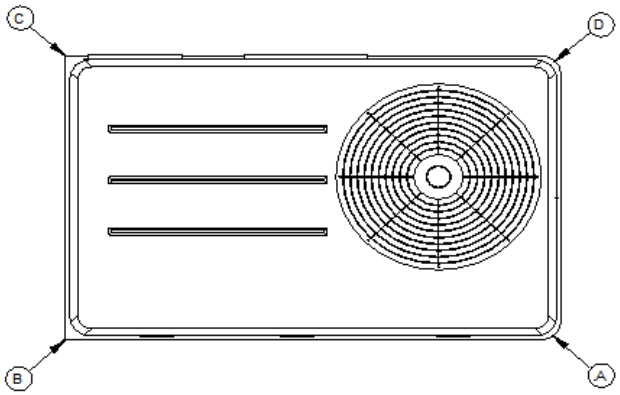
PACKAGED GAS / ELECTRIC

CLEARANCE



PACKAGED GAS / ELECTRIC

DOWNFLOW TYPICAL ROOF OPENING



PACKAGED GAS / ELECTRICAL

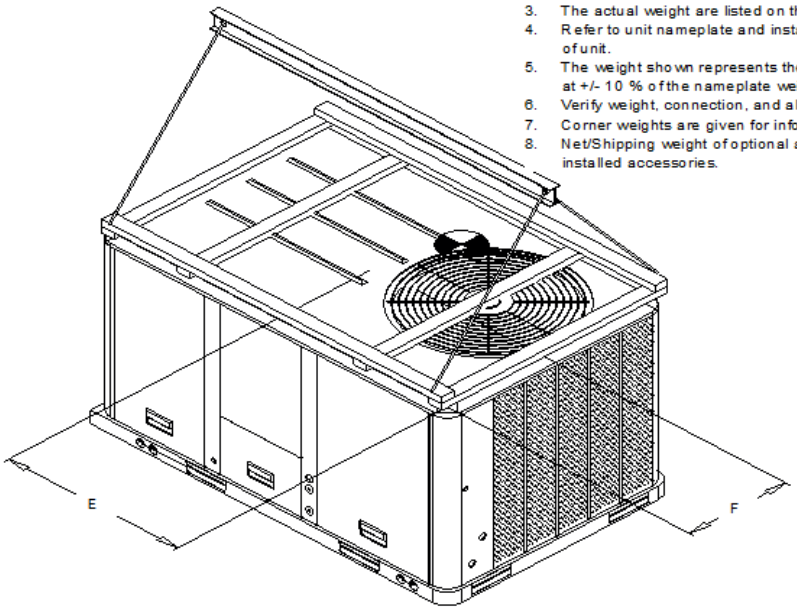
CORNER WEIGHT

INSTALLED ACCESSORIES NET WEIGHT DATA

ACCESSORY	WEIGHTS
ECONOMIZER	93.0 lb
MOTORIZED OUTSIDE AIR DAMPER	
MANUAL OUTSIDE AIR DAMPER	
BAROMETRIC RELIEF	
OVERSIZED MOTOR	
BELT DRIVE MOTOR	
POWER EXHAUST	
THROUGHT THE BASE ELECTRICAL/GAS (FIOPS)	
UNIT MOUNTED CIRCUIT BREAKER (FIOPS)	
UNIT MOUNTED DISCONNECT (FIOPS)	
POWERED CONVENIENCE OUTLET (FIOPS)	
HINGED DOORS (FIOPS)	12.0 lb
HAIL GUARD	
SMOKE DETECTOR, SUPPLY / RETURN	
NOVAR CONTROL	
STAINLESS STEEL HEAT EXCHANGER	6.0 lb
REHEAT	20.0 lb
ROOF CURB	

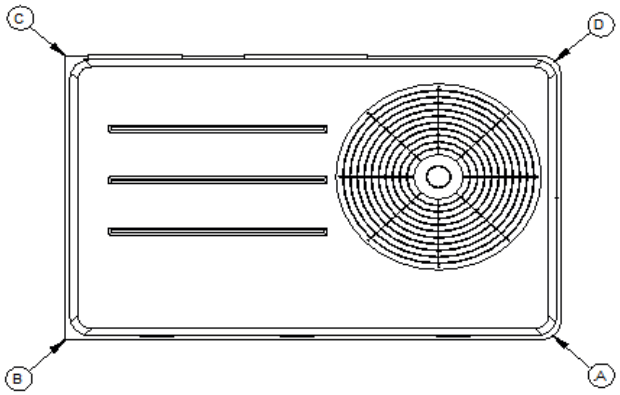
BASIC UNIT WEIGHTS		CORNER WEIGHTS				CENTER OF GRAVITIY	
SHIPPING	NET	(A)	340.0 lb	(C)	249.0 lb	(E) LENGHT	(F) WIDTH
1124.0 lb	1026.0 lb	(B)	233.0 lb	(D)	204.0 lb	41"	23"

NOTE:
1. All weights are approximate.
2. Weights for options that are not list refer to Installation guide.
3. The actual weight are listed on the unit nameplate.
4. Refer to unit nameplate and installation guide for weights before scheduling transportation and installation of unit.
5. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10 % of the nameplate weight. .
6. Verify weight, connection, and all dimension with installer documents before installation.
7. Corner weights are given for information only.
8. Net/Shipping weight of optional accessories should be added to unit weight when ordering factory or field installed accessories.



PACKAGED GAS / ELECTRICAL

RIGGING AND CENTER OF GRAVITY



PACKAGED GAS / ELECTRICAL

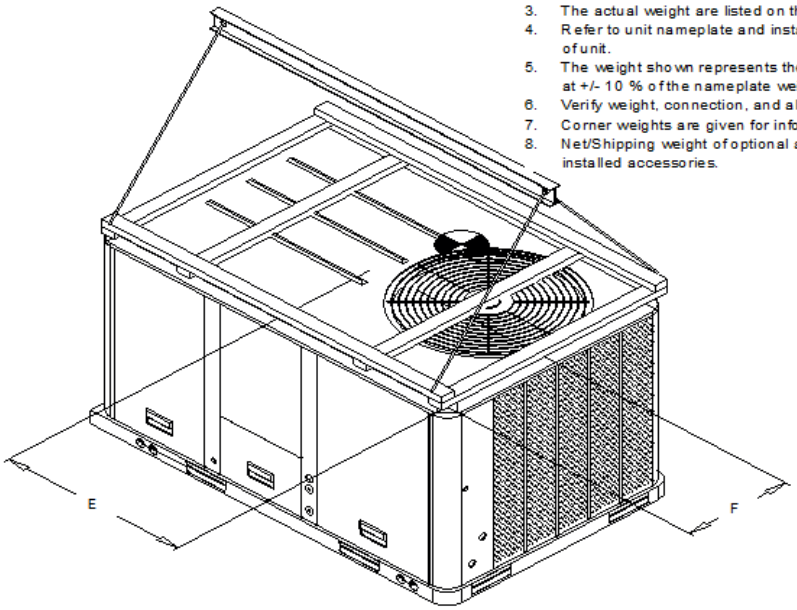
CORNER WEIGHT

INSTALLED ACCESSORIES NET WEIGHT DATA

ACCESSORY	WEIGHTS
ECONOMIZER	93.0 lb
MOTORIZED OUTSIDE AIR DAMPER	
MANUAL OUTSIDE AIR DAMPER	
BAROMETRIC RELIEF	
OVERSIZED MOTOR	
BELT DRIVE MOTOR	
POWER EXHAUST	
THROUGHT THE BASE ELECTRICAL/GAS (FIOPS)	
UNIT MOUNTED CIRCUIT BREAKER (FIOPS)	
UNIT MOUNTED DISCONNECT (FIOPS)	
POWERED CONVENIENCE OUTLET (FIOPS)	
HINGED DOORS (FIOPS)	12.0 lb
HAIL GUARD	
SMOKE DETECTOR, SUPPLY / RETURN	
NOVAR CONTROL	
STAINLESS STEEL HEAT EXCHANGER	6.0 lb
REHEAT	30.0 lb
ROOF CURB	

BASIC UNIT WEIGHTS		CORNER WEIGHTS				CENTER OF GRAVITIY	
SHIPPING	NET	(A)	356.0 lb	(C)	289.0 lb	(E) LENGHT	(F) WIDTH
1453.0 lb	1259.0 lb	(B)	371.0 lb	(D)	242.0 lb	54"	27"

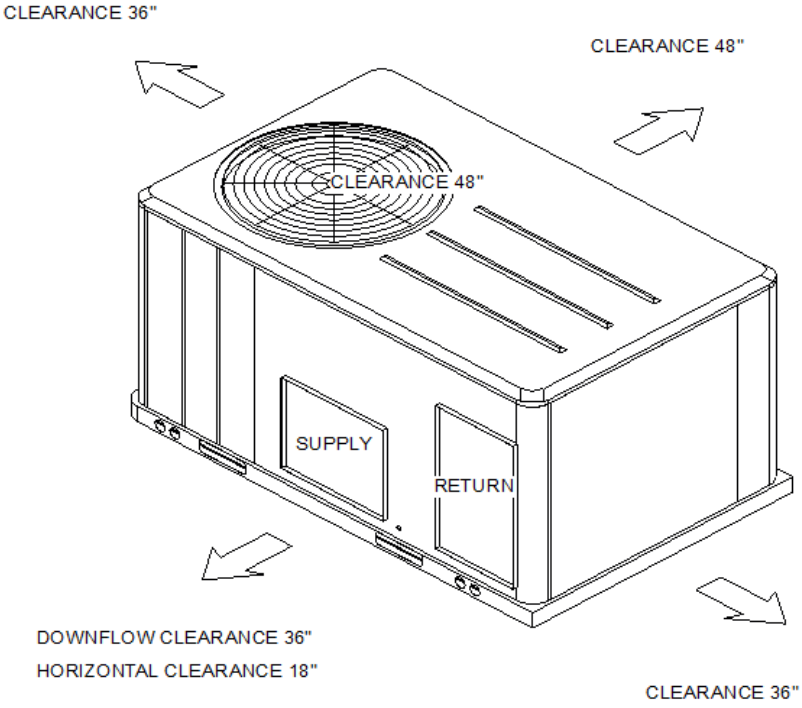
NOTE:
1. All weights are approximate.
2. Weights for options that are not list refer to Installation guide.
3. The actual weight are listed on the unit nameplate.
4. Refer to unit nameplate and installation guide for weights before scheduling transportation and installation of unit.
5. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10 % of the nameplate weight. .
6. Verify weight, connection, and all dimension with installer documents before installation.
7. Corner weights are given for information only.
8. Net/Shipping weight of optional accessories should be added to unit weight when ordering factory or field installed accessories.



PACKAGED GAS / ELECTRICAL

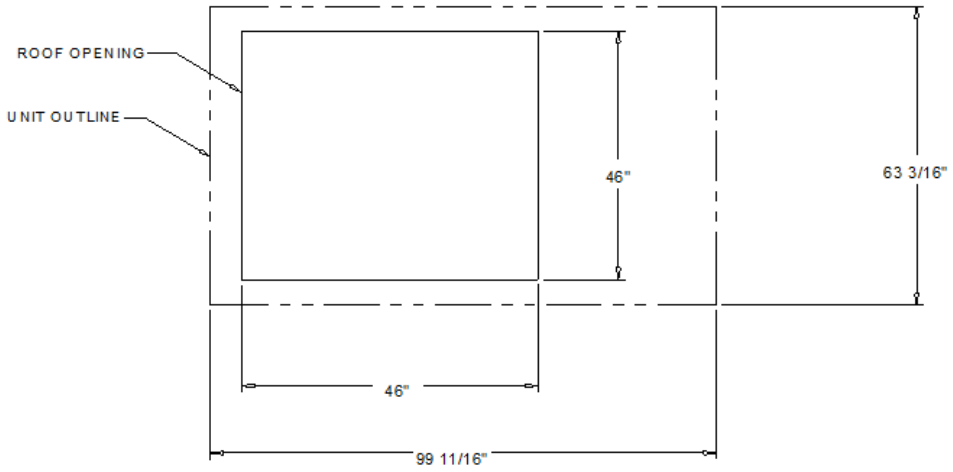
RIGGING AND CENTER OF GRAVITY

CLEARANCE FROM TOP OF UNIT 72"



PACKAGED GAS / ELECTRIC

CLEARANCE



PACKAGED GAS / ELECTRIC

DOWNFLOW TYPICAL ROOF OPENING

3-10 Ton R410A PKGD Unitary Gas/Electric Rooftop

Job Information

Job01
TIG

Tag	**RTU 4-1**		
Quantity	**1**	Model number	**YHC074F4RXA--K0C0000**

Unit Information

Tonnage	**6 Ton Dual compressor**	Unit function	**DX cooling, gas heat**
Min. unit operating weight	**1016.0 lb**	Max. unit operating weight	**1408.0 lb**
Design Airflow	**2400 cfm**		

Cooling Information

Gross Total Capacity	**70.68 MBh**	Gross Sensible Capacity	**58.85 MBh**
Gross Latent Capacity	**11.83 MBh**	Net Total Capacity	**67.68 MBh**
Net Sensible Capacity	**55.85 MBh**	Net Sensible Heat Ratio	**0.83 Number**
Cooling Entering DB	**77.60 F**	Cooling Entering WB	**63.94 F**
Cooling Leaving Unit DB	**56.52 F**	Cooling Leaving Unit WB	**54.45 F**
Ambient Temp	**95.00 F**		

Heating Information

Heating capacity	**Low gas heat SSHX 3ph**	Input Heating Capacity	**80.00 MBh**
Output Heating Capacity	**64.80 MBh**	Heating EAT	**53.40 F**
Heating LAT	**78.70 F**	Heating Delta T	**25.30 F**

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**1.000 in H2O**
Indoor Motor Power	**0.76 kW**	Component SP	**0.260 in H2O**
Indoor RPM	**1139 rpm**	Indoor mtr operating power	**1.03 bhp**
Compressor Power	**4.52 kW**	Outdoor Motor Power	**0.52 kW**
MCA	**18.70 A**	System Power	**5.80 kW**
Compressor 1 RLA	**3.50 A**	MOP	**25.00 A**
Condenser fan FLA	**0.00 A**	Evaporator fan FLA	**0.00 A**
		Total Static Pressure	**1.260 in H2O**

Acoustics

Sound Power Level ⌒Lw⌣	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 dHz	4 kHz	8 kHz
Ducted Discharge Heating								
Ducted Inlet Heating								
Outdoor Noise Heating								

Notes:

Electrical values provided are estimated only and are subject to change without notice and may differ from nameplate values.

Field installed low or high static drive kits may be needed. Please check the fan performance tables in the product catalog for application ranges.

3-10 Ton R410A PKGD Unitary Gas/Electric Rooftop

Job Information

Job01
TIG

Tag	**RTU 4-1**		
Quantity	**1**	Model number	**YHC074F4RXA--K0C0000**

Information for LEED Projects

ASHRAE 90.1	**Yes**	SEER/IEER	**15.50**
Refrig charge (HFC-410A) - ckt 1	**5.8 lb**	Compressor Power	**4.52 kW**
Refrig charge (HFC-410A) - ckt 2	**4.1 lb**	Outdoor Motor Power	**0.52 kW**
Rated capacity (AHRI)	**71.00 MBh**	Indoor mtr operating power	**1.03 bhp**
EER @ AHRI Conditions	**13.1 EER**	Exhaust fan power	**0.65 kW**

Note: This product meets the minimum equipment efficiency requirements of ASHRAE Standard 90.1-2007 and -2010 (which are based on AHRI standard rating conditions) and, therefore, also meets the LEED "Minimum Energy Performance" prerequisite in the Energy and Atmosphere section. The power data listed above is at actual user-entered conditions. Refer to the product catalog for performance at AHRI standard rating conditions.

The LEED Green Building Rating System™, developed by the U.S. Green Building Council, provides independent, third-party verification that a building project meets green building and performance measures.

Electrical values provided are estimated only and are subject to change without notice and may differ from nameplate values.

Field installed low or high static drive kits may be needed. Please check the fan performance tables in the product catalog for application ranges.

3-10 Ton R410A PKGD Unitary Gas/Electric Rooftop

Job Information

Job01
TIG

Tag	**RTU 5-1**		
Quantity	**1**	Model number	**YHC092F4-ZA--M0C0000**

Unit Information

Tonnage	**7.5 Ton Dual compressor**	Unit function	**DX cooling, gas heat**
Min. unit operating weight	**1026.0 lb**	Max. unit operating weight	**1291.0 lb**
Design Airflow	**3000 cfm**		

Cooling Information

Gross Total Capacity	**88.32 MBh**	Gross Sensible Capacity	**69.02 MBh**
Gross Latent Capacity	**19.30 MBh**	Net Total Capacity	**83.64 MBh**
Net Sensible Capacity	**64.34 MBh**	Net Sensible Heat Ratio	**0.77 Number**
Cooling Entering DB	**77.60 F**	Cooling Entering WB	**63.94 F**
Cooling Leaving Unit DB	**58.13 F**	Cooling Leaving Unit WB	**54.55 F**
Ambient Temp	**95.00 F**		

Heating Information

Heating capacity	**High gas heat SSHX 3ph**	Input Heating Capacity	**200.00 MBh**
Output Heating Capacity	**160.00 MBh**	Heating EAT	**53.40 F**
Heating LAT	**103.00 F**	Heating Delta T	**49.60 F**

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**1.000 in H2O**
Indoor Motor Power	**1.21 kW**	Component SP	**0.480 in H2O**
Indoor RPM	**1327 rpm**	Indoor mtr operating power	**1.63 bhp**
Compressor Power	**6.06 kW**	Outdoor Motor Power	**0.71 kW**
MCA	**19.90 A**	System Power	**7.98 kW**
Compressor 1 RLA	**4.70 A**	MOP	**25.00 A**
Condenser fan FLA	**0.00 A**	Evaporator fan FLA	**0.00 A**
		Total Static Pressure	**1.480 in H2O**

Acoustics

Sound Power Level ⌒Lw⌒	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 dHz	4 kHz	8 kHz
Ducted Discharge Heating	79 dB	87 dB	80 dB	77 dB	73 dB	68 dB	67 dB	59 dB
Ducted Inlet Heating	79 dB	79 dB	76 dB	67 dB	56 dB	57 dB	57 dB	48 dB
Outdoor Noise Heating	90 dB	86 dB	90 dB	85 dB	80 dB	77 dB	74 dB	66 dB

Notes:
Ducted Inlet and Ducted Discharge Sound Power Levels are in accordance with AHRI 260.
Outdoor Sound Power Levels are in accordance with AHRI 270.

Electrical values provided are estimated only and are subject to change without notice and may differ from nameplate values.

Field installed low or high static drive kits may be needed. Please check the fan performance tables in the product catalog for application ranges.

3-10 Ton R410A PKGD Unitary Gas/Electric Rooftop

Job Information

Job01
TIG

Tag	**RTU 5-1**		
Quantity	**1**	Model number	**YHC092F4-ZA--M0C0000**

Information for LEED Projects

ASHRAE 90.1	**Yes**	SEER/IEER	**14.50**
Refrig charge (HFC-410A) - ckt 1	**6.2 lb**	Compressor Power	**6.06 kW**
Refrig charge (HFC-410A) - ckt 2	**4.3 lb**	Outdoor Motor Power	**0.71 kW**
Rated capacity (AHRI)	**89.00 MBh**	Indoor mtr operating power	**1.63 bhp**
EER @ AHRI Conditions	**12.6 EER**	Exhaust fan power	**0.65 kW**

Note: This product meets the minimum equipment efficiency requirements of ASHRAE Standard 90.1-2007 and -2010 (which are based on AHRI standard rating conditions) and, therefore, also meets the LEED "Minimum Energy Performance" prerequisite in the Energy and Atmosphere section. The power data listed above is at actual user-entered conditions. Refer to the product catalog for performance at AHRI standard rating conditions.

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Electrical values provided are estimated only and are subject to change without notice and may differ from nameplate values.

Field installed low or high static drive kits may be needed. Please check the fan performance tables in the product catalog for application ranges.

3-10 Ton R410A PKGD Unitary Gas/Electric Rooftop

Job Information

Job01
TIG

Tag	**RTU 5-2**		
Quantity	**1**	Model number	**YHC120F4-XA--M0C0000**

Unit Information

Tonnage	**10 Ton**	Unit function	**DX cooling, gas heat**
Min. unit operating weight	**1259.0 lb**	Max. unit operating weight	**1608.0 lb**
Design Airflow	**4000 cfm**		

Cooling Information

Gross Total Capacity	**110.22 MBh**	Gross Sensible Capacity	**94.10 MBh**
Gross Latent Capacity	**16.12 MBh**	Net Total Capacity	**105.95 MBh**
Net Sensible Capacity	**89.83 MBh**	Net Sensible Heat Ratio	**0.85 Number**
Cooling Entering DB	**77.60 F**	Cooling Entering WB	**63.94 F**
Cooling Leaving Unit DB	**57.23 F**	Cooling Leaving Unit WB	**54.82 F**
Ambient Temp	**95.00 F**		

Heating Information

Heating capacity	**Low gas heat SSHX 3ph**	Input Heating Capacity	**150.00 MBh**
Output Heating Capacity	**120.00 MBh**	Heating EAT	**53.40 F**
Heating LAT	**81.50 F**	Heating Delta T	**28.10 F**

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**0.800 in H2O**
Indoor Motor Power	**1.10 kW**	Component SP	**1.140 in H2O**
Indoor RPM	**1550 rpm**	Indoor mtr operating power	**1.48 bhp**
Compressor Power	**7.79 kW**	Outdoor Motor Power	**0.53 kW**
MCA	**21.90 A**	System Power	**9.42 kW**
Compressor 1 RLA	**5.80 A**	MOP	**30.00 A**
Condenser fan FLA	**0.00 A**	Evaporator fan FLA	**0.00 A**
		Total Static Pressure	**1.940 in H2O**

Acoustics

Sound Power Level ⌒Lw⌒	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 dHz	4 kHz	8 kHz
Ducted Discharge Heating	81 dB	90 dB	86 dB	83 dB	78 dB	74 dB	75 dB	66 dB
Ducted Inlet Heating	81 dB	81 dB	81 dB	71 dB	61 dB	61 dB	63 dB	53 dB
Outdoor Noise Heating	89 dB	87 dB	91 dB	85 dB	80 dB	77 dB	73 dB	66 dB

Notes:
Ducted Inlet and Ducted Discharge Sound Power Levels are in accordance with AHRI 260.
Outdoor Sound Power Levels are in accordance with AHRI 270.

Electrical values provided are estimated only and are subject to change without notice and may differ from nameplate values.

Field installed low or high static drive kits may be needed. Please check the fan performance tables in the product catalog for application ranges.

3-10 Ton R410A PKGD Unitary Gas/Electric Rooftop

Job Information

Job01
TIG

Tag	**RTU 5-2**		
Quantity	**1**	Model number	**YHC120F4-XA--M0C000 0**

Information for LEED Projects

ASHRAE 90.1	**Yes**	SEER/IEER	**14.70**
Refrig charge (HFC-410A) - ckt 1	**8.0 lb**	Compressor Power	**7.79 kW**
Refrig charge (HFC-410A) - ckt 2	**5.0 lb**	Outdoor Motor Power	**0.53 kW**
Rated capacity (AHRI)	**113.00 MBh**	Indoor mtr operating power	**1.48 bhp**
EER @ AHRI Conditions	**12.4 EER**	Exhaust fan power	**0.65 kW**

Note: This product meets the minimum equipment efficiency requirements of ASHRAE Standard 90.1-2007 and -2010 (which are based on AHRI standard rating conditions) and, therefore, also meets the LEED "Minimum Energy Performance" prerequisite in the Energy and Atmosphere section. The power data listed above is at actual user-entered conditions. Refer to the product catalog for performance at AHRI standard rating conditions.

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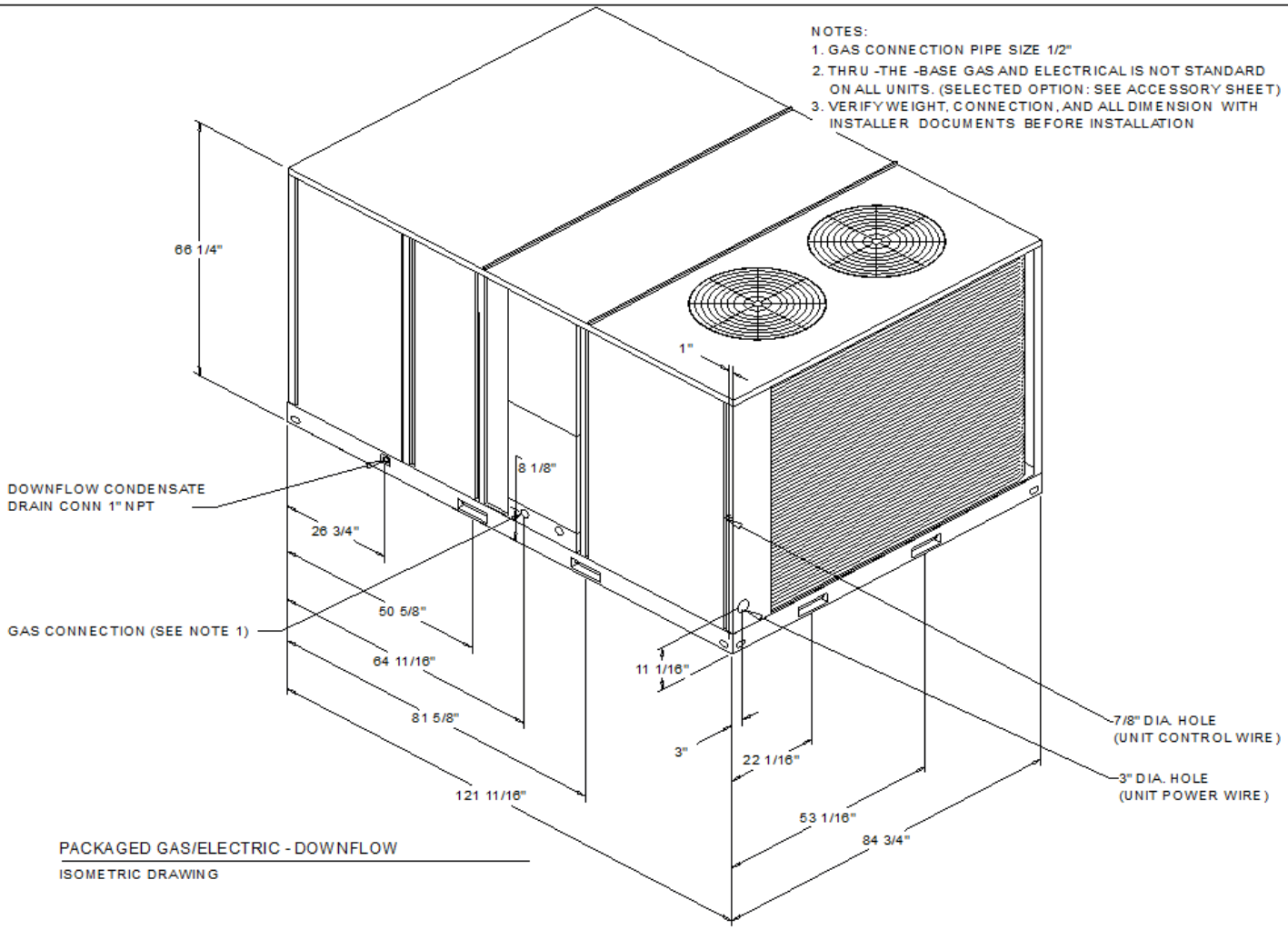
Electrical values provided are estimated only and are subject to change without notice and may differ from nameplate values.

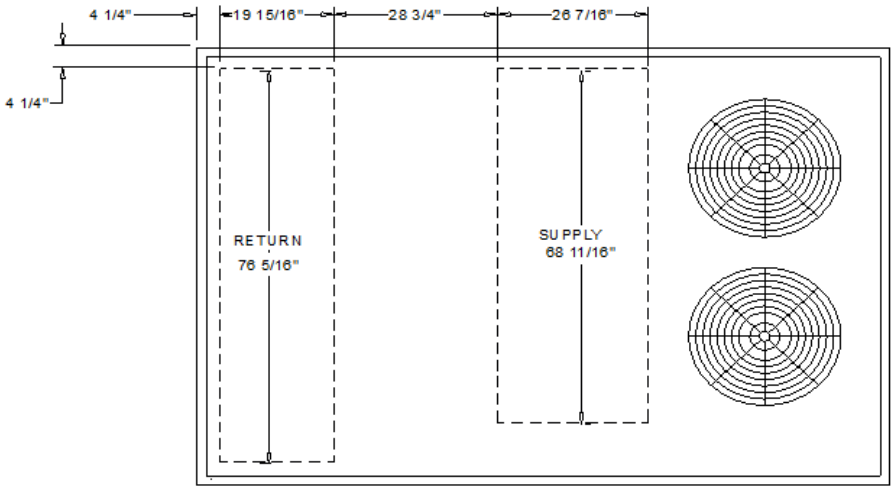
Field installed low or high static drive kits may be needed. Please check the fan performance tables in the product catalog for application ranges.

NOTES:
1. GAS CONNECTION PIPE SIZE 1/2"
2. THRU -THE -BASE GAS AND ELECTRICAL IS NOT STANDARD ON ALL UNITS. (SELECTED OPTION: SEE ACCESSORY SHEET)
3. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION



PACKAGED GAS/ELECTRIC - DOWNFLOW

ISOMETRIC DRAWING



PACKAGED GAS/ELECTRIC - DOWNFLOW

PLAN VIEW DRAWING

ELECTRICAL / GENERAL DATA

GENERAL PERFORMANCE

Model (Ton):	YHD180G (15.0)
Unit Operating Voltage Range:	414-506
Unit Primary Voltage:	460
Unit Secondary Voltage:	-
Unit Hertz:	60
Unit Phase:	3
EER: (5)	12.0

Standard Motor (1) (3)

Minimum Circuit Ampacity:	35.0
Maximum Fuse Size:	45.0
Maximum (HACR) Circuit Breaker:	45.0

Standard Oversized Motor (1) (4)

Minimum Circuit Ampacity:	
Maximum Fuse Size:	
Maximum (HACR) Circuit Breaker:	

Accessory Oversized Motor (1) (4)

Minimum Circuit Ampacity:	
Maximum Fuse Size:	
Maximum (HACR) Circuit Breaker:	

GAS HEATING

Heating Models:	Low
Heating and 1 Stage Input (Btu/h)	250000 / 175000
Heating and 1 Stage Output (Btu/h):	200000 / 140000
Min./Max. Gas Input - Pressure Natural or LP (in w.c):	2.5 / 14.0
Gas Connection Pipe Size:	1/2"

COMPRESSOR

	Circuit(s)
Number:	2
Horsepower:	6.9
Phase:	3
Rated Load Amps:	13.2/13.2
Locked Rotor Amps:	75.0/75.0

INDOOR MOTOR

Standard Motor

Number: (3)	1
Horsepower:	3.0
Motor Speed (RPM):	1,740
Phase:	1
Full Load Amps:	4.8
Locked Rotor Amps:	40.5

Standard Oversized Motor (4)

Number:	
Horsepower:	
Motor Speed (RPM):	
Phase:	
Full Load Amps:	
Locked Rotor Amps:	

Accessory Oversized Motor (4)

Number:	
Horsepower:	
Motor Speed (RPM):	
Phase:	
Full Load Amps:	
Locked Rotor Amps:	

OUTDOOR MOTOR

Number:	2
Horsepower:	1.0
Motor speed (RPM):	1,100
Phase:	3
Full Load Amps:	1.8
Locked Rotor Amps:	7.7

POWER EXHAUST

(Field Installed Power Exhaust)

Horsepower:	N/A
Motor Speed (RPM):	N/A
Phase:	N/A
Full Load Amps:	N/A
Locked Rotor Amps:	N/A

COMBUSTION BLOWER MOTOR

(Gas-Fired Heating only)

Horsepower:	0.1
Motor Speed (RPM):	3500/2800
Phase:	1
Full Load Amps:	0.8
Locked Rotor Amps:	2.00

FILTER

Type:	Throwaway
Furnished:	Yes
Number:	8/4
Recommended Size:	20"x20"x2" / 20"x16"x2"

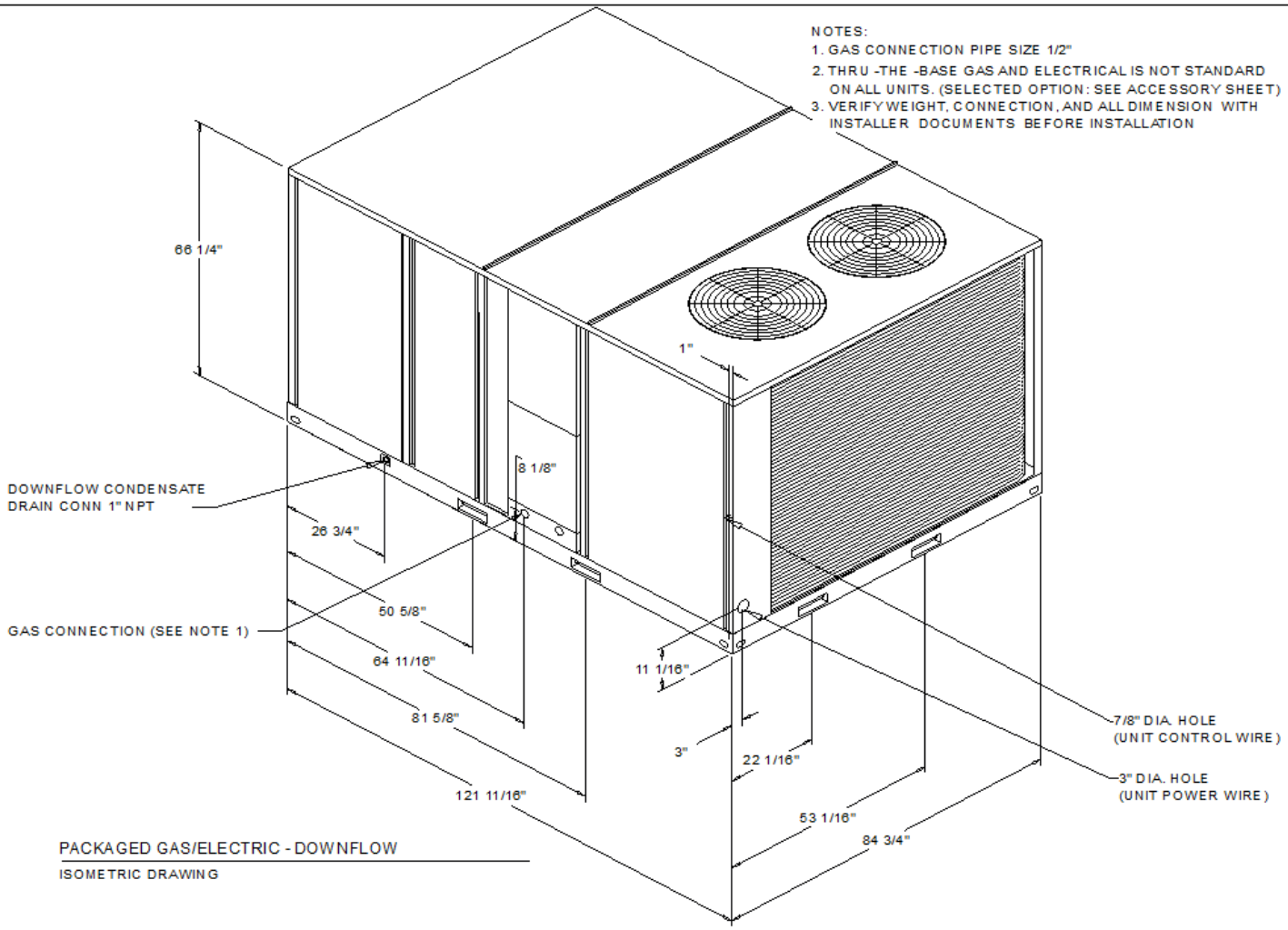
REFRIGERANT (2)

	Circuit #1 / 2
Type:	R410
Factory Charge Circuit #1 / 2:	10.9 lb / 8.9 lb

NOTES:

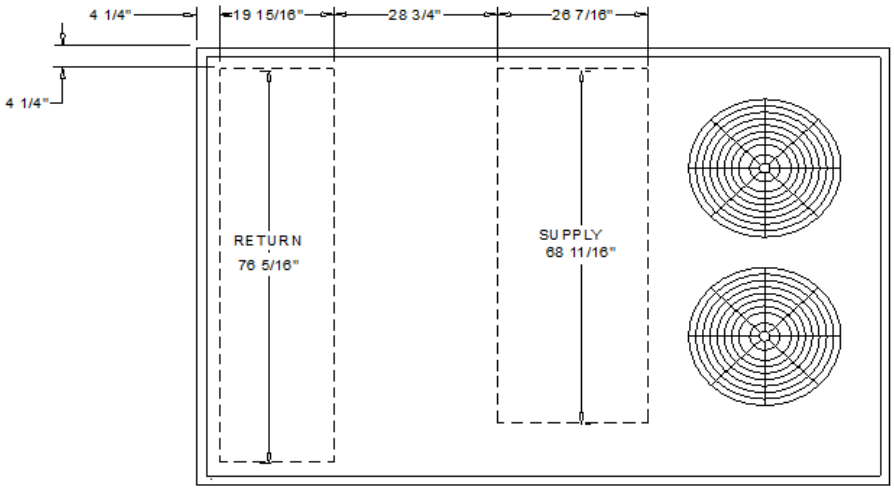
1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value include Standard Motor.
4. Value include Oversized Motor
5. EER is rated at AHRI conditions and in accordance with DOE test procedures.

NOTES:
1. GAS CONNECTION PIPE SIZE 1/2"
2. THRU -THE -BASE GAS AND ELECTRICAL IS NOT STANDARD ON ALL UNITS. (SELECTED OPTION: SEE ACCESSORY SHEET)
3. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION



PACKAGED GAS/ELECTRIC - DOWNFLOW

ISOMETRIC DRAWING



PACKAGED GAS/ELECTRIC - DOWNFLOW

PLAN VIEW DRAWING

ELECTRICAL / GENERAL DATA

GENERAL PERFORMANCE

Model (Ton):	YHD210G (17.5)
Unit Operating Voltage Range:	414-506
Unit Primary Voltage:	460
Unit Secondary Voltage:	-
Unit Hertz:	60
Unit Phase:	3
EER: (5)	11.8

Standard Motor (1) (3)

Minimum Circuit Ampacity:	42.0
Maximum Fuse Size:	50.0
Maximum (HACR) Circuit Breaker:	50.0

Standard Oversized Motor (1) (4)

Minimum Circuit Ampacity:	
Maximum Fuse Size:	
Maximum (HACR) Circuit Breaker:	

Accessory Oversized Motor (1) (4)

Minimum Circuit Ampacity:	
Maximum Fuse Size:	
Maximum (HACR) Circuit Breaker:	

GAS HEATING

Heating Models:	Low
Heating and 1 Stage Input (Btu/h)	250000 / 175000
Heating and 1 Stage Output (Btu/h):	200000 / 140000
Min./Max. Gas Input - Pressure Natural or LP (in w.c):	2.5 / 14.0
Gas Connection Pipe Size:	1/2"

COMPRESSOR

	Circuit(s)
Number:	2
Horsepower:	7.5/6.9
Phase:	3
Rated Load Amps:	14.1/13.2
Locked Rotor Amps:	98.0/100.0

INDOOR MOTOR

Standard Motor

Number: (3)	1
Horsepower:	5.0
Motor Speed (RPM):	3,450
Phase:	3
Full Load Amps:	7.6
Locked Rotor Amps:	54.9

Standard Oversized Motor (4)

Number:	
Horsepower:	
Motor Speed (RPM):	
Phase:	
Full Load Amps:	
Locked Rotor Amps:	

Accessory Oversized Motor (4)

Number:	
Horsepower:	
Motor Speed (RPM):	
Phase:	
Full Load Amps:	
Locked Rotor Amps:	

OUTDOOR MOTOR

Number:	2
Horsepower:	1.0
Motor speed (RPM):	1,100
Phase:	3
Full Load Amps:	1.8
Locked Rotor Amps:	7.7

POWER EXHAUST

(Field Installed Power Exhaust)

Horsepower:	N/A
Motor Speed (RPM):	N/A
Phase:	N/A
Full Load Amps:	N/A
Locked Rotor Amps:	N/A

COMBUSTION BLOWER MOTOR

(Gas-Fired Heating only)

Horsepower:	0.1
Motor Speed (RPM):	3500/2800
Phase:	1
Full Load Amps:	0.8
Locked Rotor Amps:	2.00

FILTER

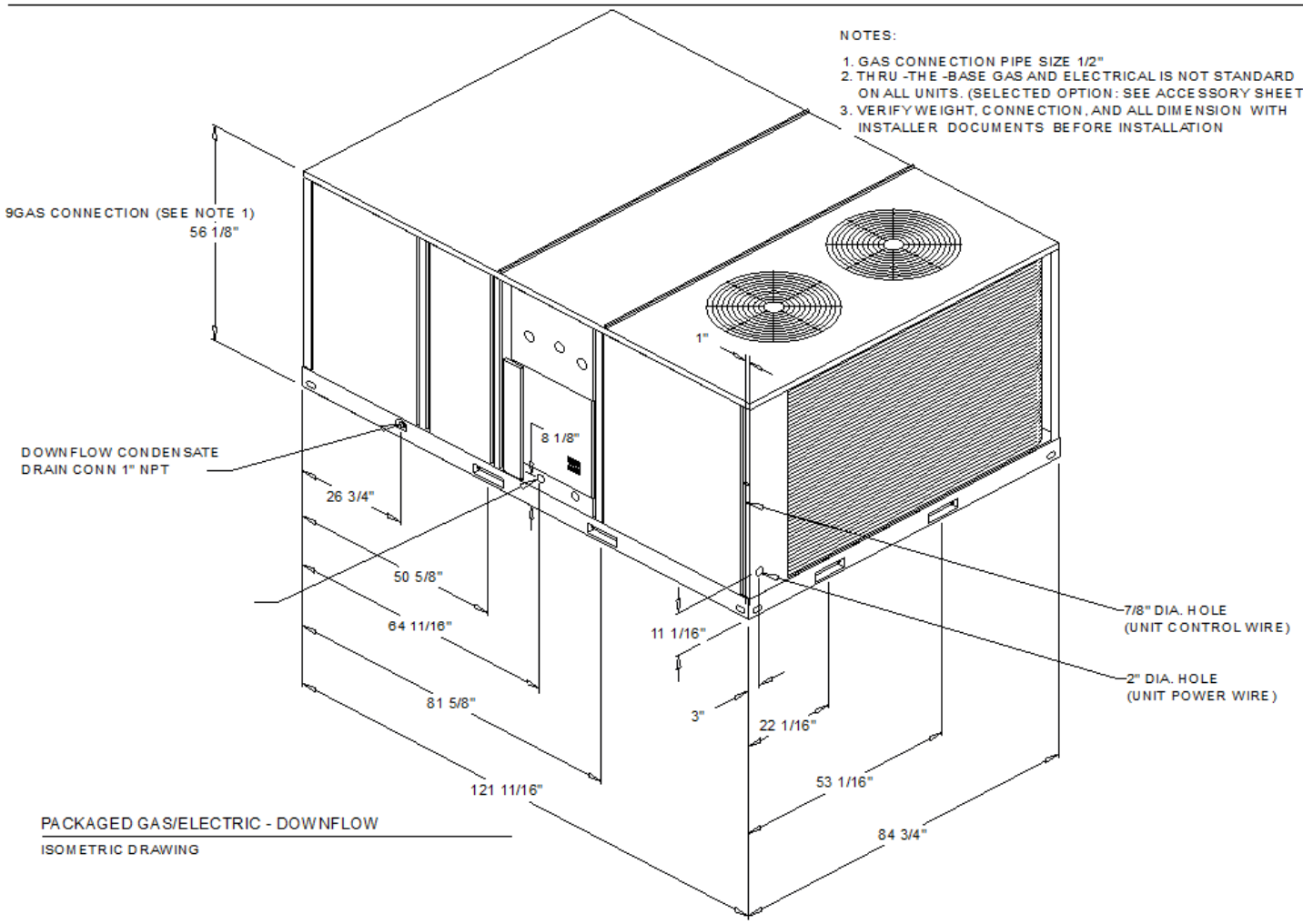
Type:	Throwaway
Furnished:	Yes
Number:	4/4
Recommended Size:	20"x20"x2" / 20"x16"x2"

REFRIGERANT (2)

	Circuit #1 / 2
Type:	R-410
Factory Charge Circuit #1 / 2:	12.2 lb / 9 in3

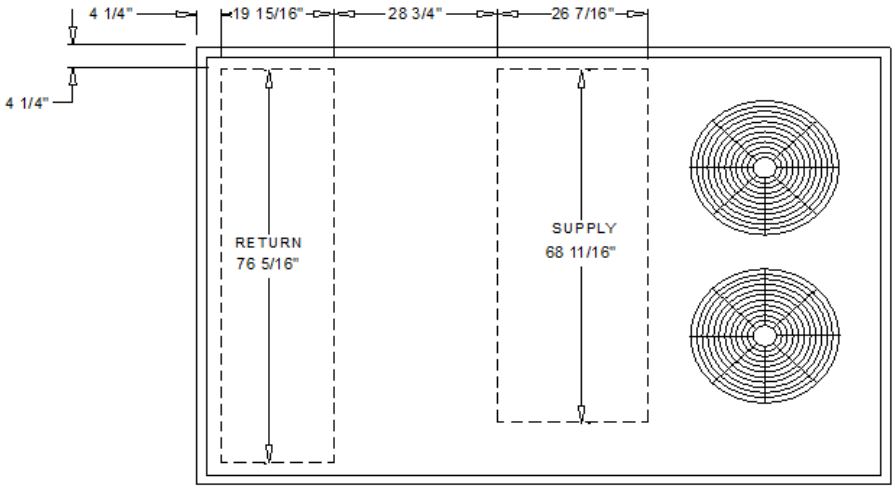
NOTES:

1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value include Standard Motor.
4. Value include Oversized Motor
5. EER is rated at AHRI conditions and in accordance with DOE test procedures.



PACKAGED GAS/ELECTRIC - DOWNFLOW

ISOMETRIC DRAWING



PACKAGED GAS/ELECTRIC - DOWNFLOW

PLAN VIEW DRAWING

ELECTRICAL / GENERAL DATA

GENERAL PERFORMANCE

Model (Ton):	YHD150G (12.5)
Unit Operating Voltage Range:	414-506
Unit Primary Voltage:	460
Unit Secondary Voltage:	-
Unit Hertz:	60
Unit Phase:	3
EER: (5)	12.1

Standard Motor (1) (3)

Minimum Circuit Ampacity:	32.0
Maximum Fuse Size:	40.0
Maximum (HACR) Circuit Breaker:	40.0

Standard Oversized Motor (1) (4)

Minimum Circuit Ampacity:	
Maximum Fuse Size:	
Maximum (HACR) Circuit Breaker:	

Accessory Oversized Motor (1) (4)

Minimum Circuit Ampacity:	
Maximum Fuse Size:	
Maximum (HACR) Circuit Breaker:	

GAS HEATING

Heating Models:	Low
Heating and 1 Stage Input (Btu/h)	150,000 / 100,000
Heating and 1 Stage Output (Btu/h):	120,000 / 80,000
Min./Max. Gas Input - Pressure Natural or LP (in w.c):	2.5 / 14.0
Gas Connection Pipe Size:	1/2"

COMPRESSOR

	Circuit(s)
Number:	2
Horsepower:	5.6
Phase:	3
Rated Load Amps:	10.6/10.6
Locked Rotor Amps:	75.0/75.0

INDOOR MOTOR

Standard Motor

Number: (3)	1
Horsepower:	3.0
Motor Speed (RPM):	1,740
Phase:	3
Full Load Amps:	4.8
Locked Rotor Amps:	40.5

Standard Oversized Motor (4)

Number:	
Horsepower:	
Motor Speed (RPM):	
Phase:	
Full Load Amps:	
Locked Rotor Amps:	

Accessory Oversized Motor (4)

Number:	
Horsepower:	
Motor Speed (RPM):	
Phase:	
Full Load Amps:	
Locked Rotor Amps:	

OUTDOOR MOTOR

Number:	2
Horsepower:	0.5
Motor speed (RPM):	1,100
Phase:	3
Full Load Amps:	1.35
Locked Rotor Amps:	4.82

POWER EXHAUST

(Field Installed Power Exhaust)

Horsepower:	N/A
Motor Speed (RPM):	N/A
Phase:	N/A
Full Load Amps:	N/A
Locked Rotor Amps:	N/A

COMBUSTION BLOWER MOTOR

(Gas-Fired Heating only)

Horsepower:	0.05
Motor Speed (RPM):	3500/2800
Phase:	1
Full Load Amps:	0.5
Locked Rotor Amps:	0.78

FILTER

Type:	Throwaway
Furnished:	Yes
Number:	4/4
Recommended Size:	20"x20"x2" / 20"x25"x2"

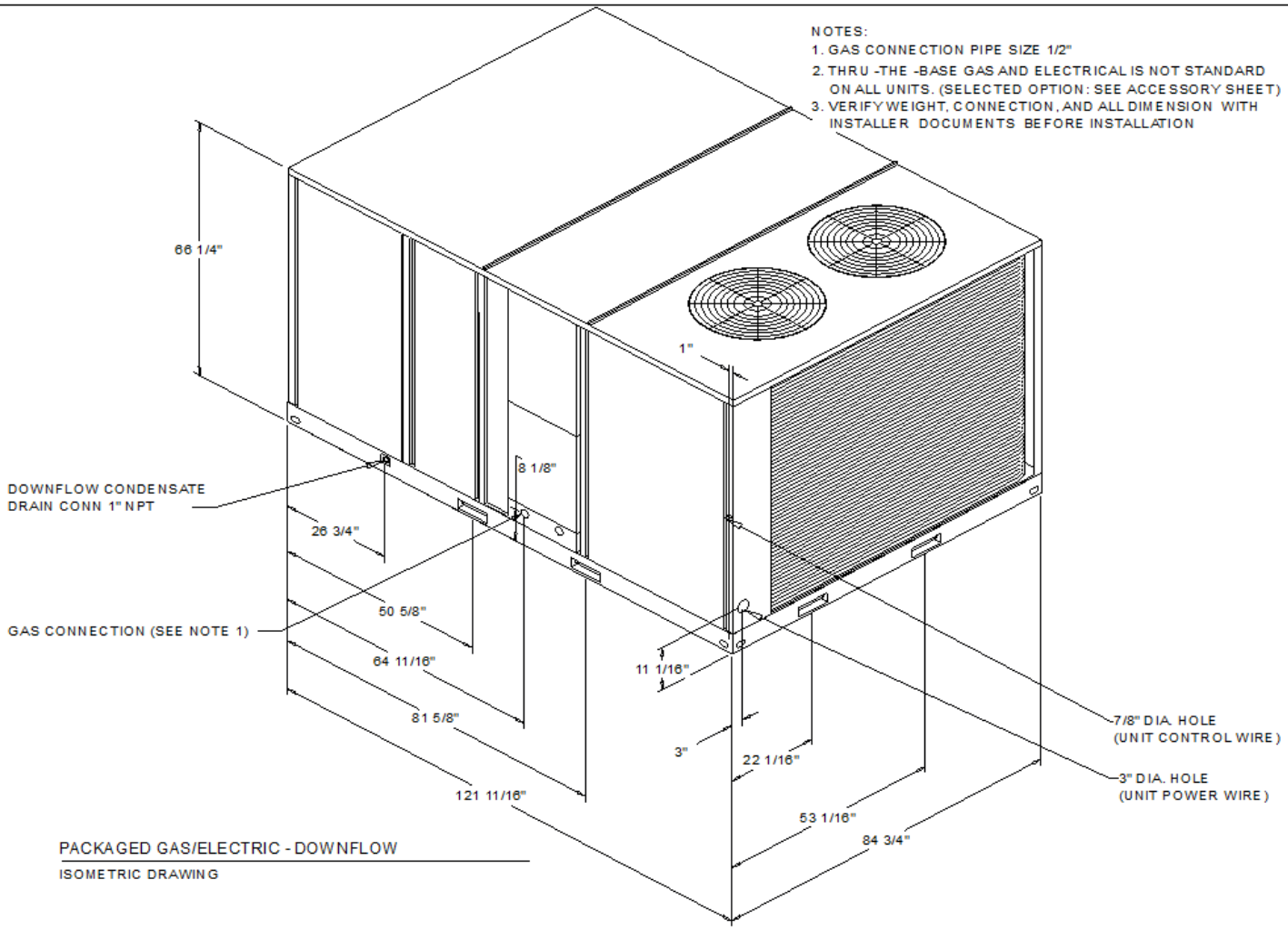
REFRIGERANT (2)

	Circuit #1 / 2
Type:	R-410
Factory Charge Circuit #1 / 2:	9.2 lb / 6.9 lb

NOTES:

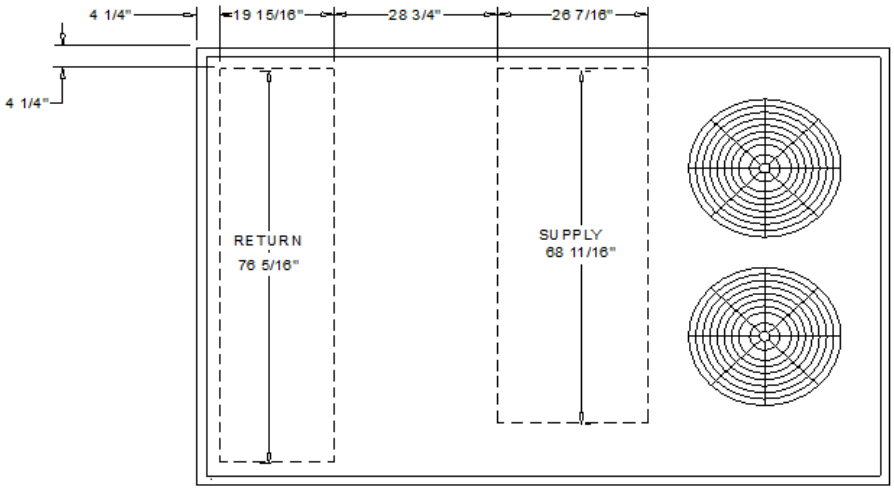
1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value include Standard Motor.
4. Value include Oversized Motor
5. EER is rated at AHRI conditions and in accordance with DOE test procedures.

NOTES:
1. GAS CONNECTION PIPE SIZE 1/2"
2. THRU -THE -BASE GAS AND ELECTRICAL IS NOT STANDARD ON ALL UNITS. (SELECTED OPTION: SEE ACCESSORY SHEET)
3. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION



PACKAGED GAS/ELECTRIC - DOWNFLOW

ISOMETRIC DRAWING



PACKAGED GAS/ELECTRIC - DOWNFLOW

PLAN VIEW DRAWING

ELECTRICAL / GENERAL DATA

GENERAL PERFORMANCE

Model (Ton):	YHD240G (20.0)
Unit Operating Voltage Range:	414-506
Unit Primary Voltage:	460
Unit Secondary Voltage:	-
Unit Hertz:	60
Unit Phase:	3
EER: (5)	11.0

Standard Motor (1) (3)

Minimum Circuit Ampacity:	54.0
Maximum Fuse Size:	70.0
Maximum (HACR) Circuit Breaker:	70.0

Standard Oversized Motor (1) (4)

Minimum Circuit Ampacity:	57.0
Maximum Fuse Size:	70.0
Maximum (HACR) Circuit Breaker:	70.0

Accessory Oversized Motor (1) (4)

Minimum Circuit Ampacity:	
Maximum Fuse Size:	
Maximum (HACR) Circuit Breaker:	

GAS HEATING

Heating Models:	Low
Heating and 1 Stage Input (Btu/h)	250000 / 175000
Heating and 1 Stage Output (Btu/h):	200000 / 140000
Min./Max. Gas Input - Pressure Natural or LP (in w.c):	2..5 / 14.0
Gas Connection Pipe Size:	1/2"

COMPRESSOR

	Circuit(s)
Number:	2
Horsepower:	10.0
Phase:	3
Rated Load Amps:	18.6/18.6
Locked Rotor Amps:	142.0/142.0

INDOOR MOTOR

Standard Motor

Number: (3)	1
Horsepower:	5.0
Motor Speed (RPM):	3,450
Phase:	3
Full Load Amps:	7.6
Locked Rotor Amps:	54.9

Standard Oversized Motor (4)

Number:	1
Horsepower:	7.5
Motor Speed (RPM):	3,470
Phase:	3
Full Load Amps:	11.0
Locked Rotor Amps:	74.0

Accessory Oversized Motor (4)

Number:	
Horsepower:	
Motor Speed (RPM):	
Phase:	
Full Load Amps:	
Locked Rotor Amps:	

OUTDOOR MOTOR

Number:	2
Horsepower:	1.0
Motor speed (RPM):	1,125
Phase:	3
Full Load Amps:	1.8
Locked Rotor Amps:	7.7

POWER EXHAUST

(Field Installed Power Exhaust)

Horsepower:	N/A
Motor Speed (RPM):	N/A
Phase:	N/A
Full Load Amps:	N/A
Locked Rotor Amps:	N/A

COMBUSTION BLOWER MOTOR

(Gas-Fired Heating only)

Horsepower:	0.1
Motor Speed (RPM):	3500/2800
Phase:	1
Full Load Amps:	0.8
Locked Rotor Amps:	2.00

FILTER

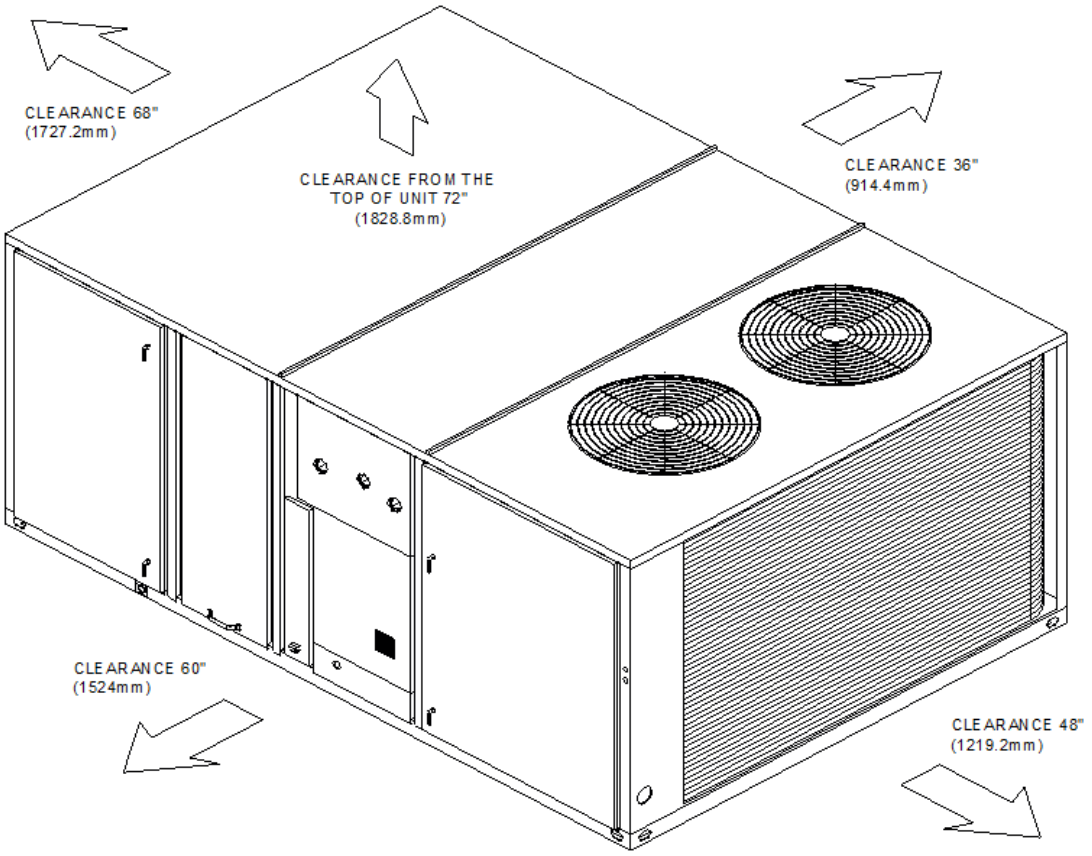
Type:	Throwaway
Furnished:	Yes
Number:	8 / 4
Recommended Size:	20"x20"x2" / 20"x16"x2"

REFRIGERANT (2)

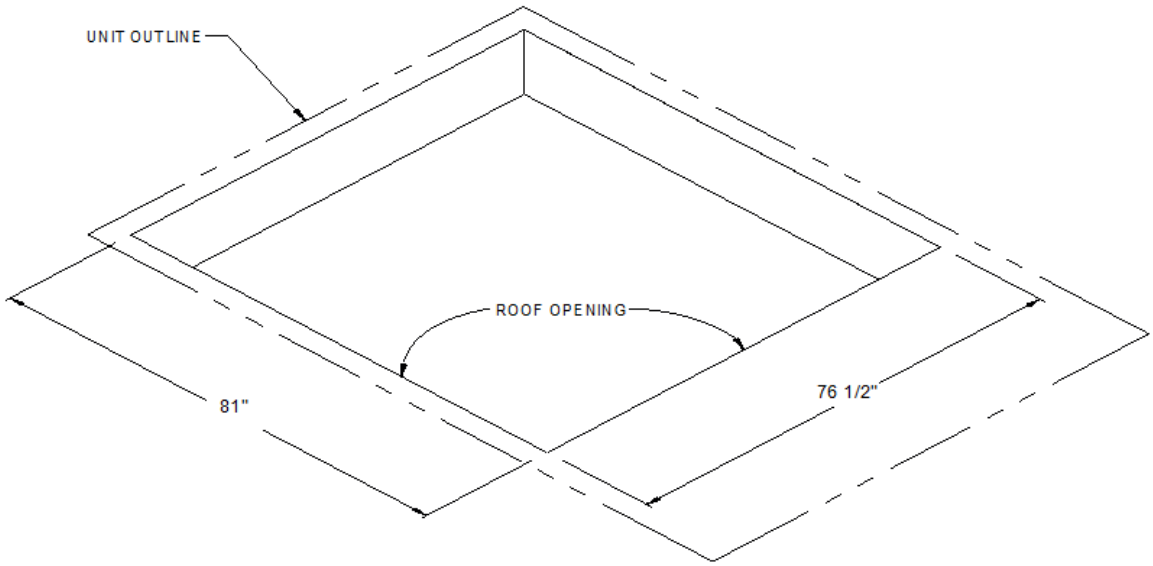
	Circuit #1 / 2
Type:	R-410
Factory Charge Circuit #1 / 2:	11.9 lb / 9.6 lb

NOTES:

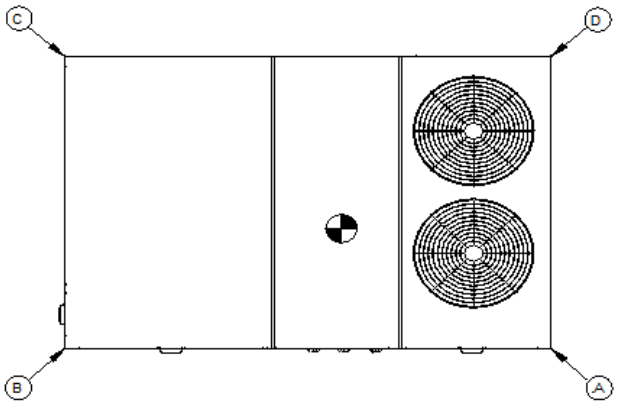
1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value include Standard Motor.
4. Value include Oversized Motor
5. EER is rated at AHRI conditions and in accordance with DOE test procedures.



DOWNFLOW-PACKAGED GAS/ELECTRIC CLEARANCE



DOWNFLOW-PACKAGED GAS/ELECTRIC ROOF OPENING CLEARANCE



CORNER WEIGHT

Base Unit and Corner Weights only

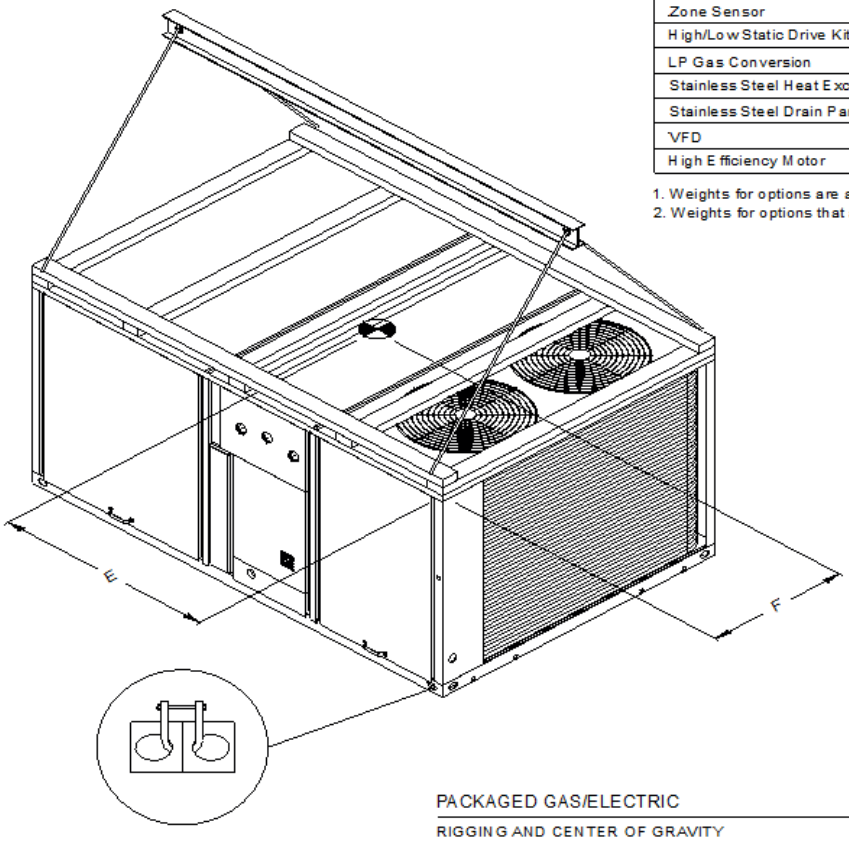
Base unit weights		Corner Weights				Center of Gravity	
SHIPPING	NET	(A)	(B)	(C)	(D)	E	F
2544"	2101.0 lb	595.0 lb	508.0 lb	377.0 lb	494.0 lb	58"	35"

1. All weights are approximate.
2. The actual weight are listed on the unit nameplate.
3. Refer to unit nameplate and installation guide for weights before scheduling transportation and installation of unit.
4. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10 % of the nameplate weight. .
5. Verify weight, connection, and all dimension with installer documents before installation.
6. Corner weights are given for information only.
7. Net/Shipping weight of optional accessories should be added to unit weight when ordering factory or field installed accessories.

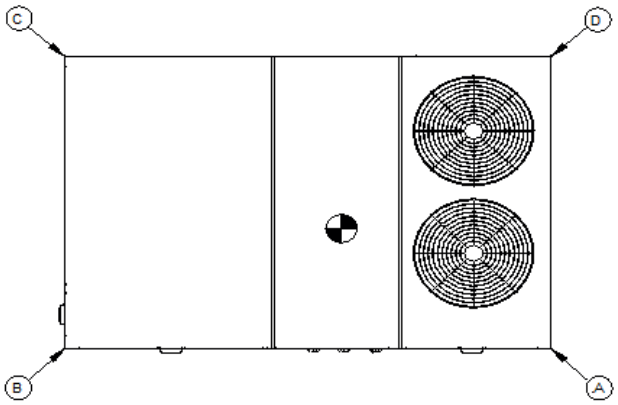
Installed Options Net Weight Data

Accessory	Weight
Economizer, Manual and Motorized Outside Air Damper	250.0 lb
Power Exhaust	
Roof Curb	
Oversized Motor	
Hail Guard	
Hinged Access Doors	27.0 lb
Power Conv. Outlet	
Through the Base Electrical	
Circuit Breaker	
Disconnect	
Smoke Detector	
Novar	
Zone Sensor	
High/Low Static Drive Kit	
LP Gas Conversion	
Stainless Steel Heat Exchanger	
Stainless Steel Drain Pan	50.0 lb
VFD	
High Efficiency Motor	

1. Weights for options are approximate.
2. Weights for options that are not list refer to Installation guide.



PACKAGED GAS/ELECTRIC
RIGGING AND CENTER OF GRAVITY



CORNER WEIGHT

Base Unit and Corner Weights only

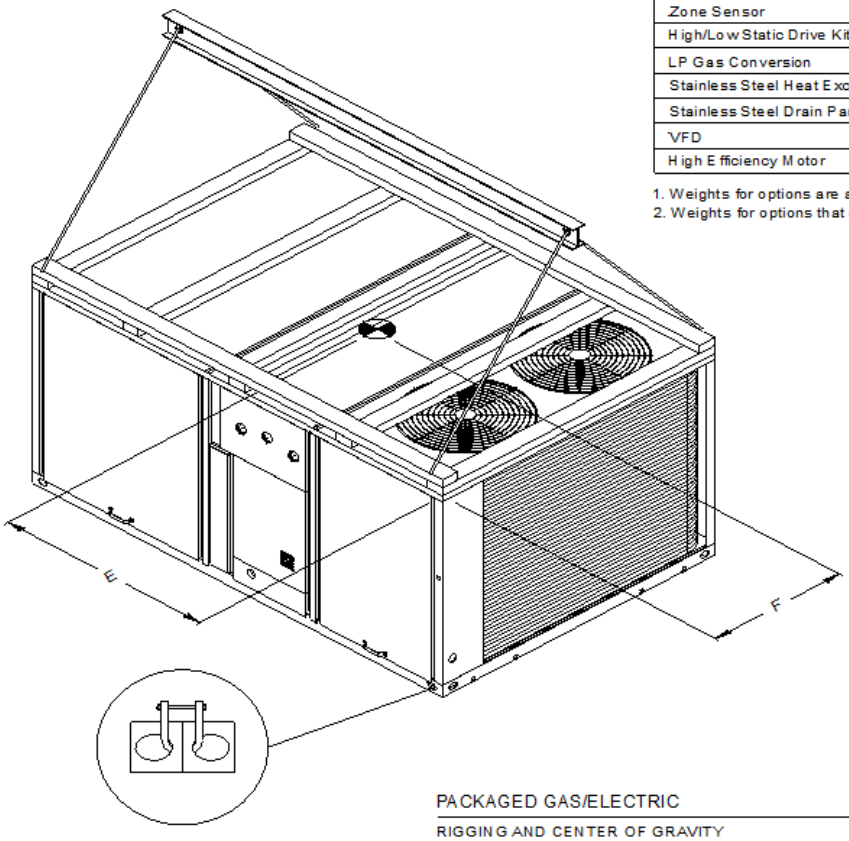
Base unit weights		Corner Weights				Center of Gravity	
SHIPPING	NET	(A)	(B)	(C)	(D)	E	F
2589.0 lb	2146.0 lb	756.0 lb	514.0 lb	378.0 lb	503.0 lb	50"	34"

1. All weights are approximate.
2. The actual weight are listed on the unit nameplate.
3. Refer to unit nameplate and installation guide for weights before scheduling transportation and installation of unit.
4. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10 % of the nameplate weight. .
5. Verify weight, connection, and all dimension with installer documents before installation.
6. Corner weights are given for information only.
7. Net/Shipping weight of optional accessories should be added to unit weight when ordering factory or field installed accessories.

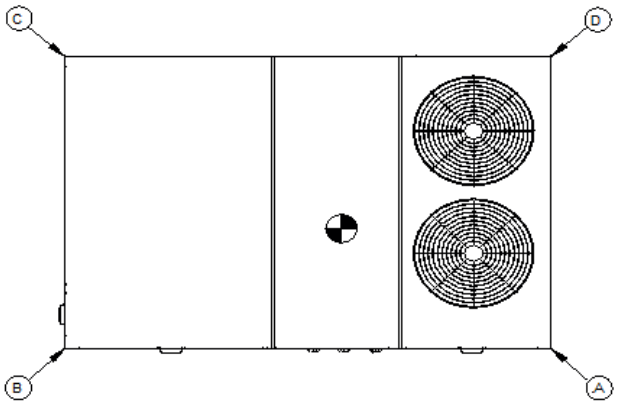
Installed Options Net Weight Data

Accessory	Weight
Economizer, Manual and Motorized Outside Air Damper	250.0 lb
Power Exhaust	
Roof Curb	
Oversized Motor	
Hail Guard	
Hinged Access Doors	27.0 lb
Power Conv. Outlet	
Through the Base Electrical	
Circuit Breaker	
Disconnect	
Smoke Detector	
Novar	
Zone Sensor	
High/Low Static Drive Kit	
LP Gas Conversion	
Stainless Steel Heat Exchanger	
Stainless Steel Drain Pan	50.0 lb
VFD	
High Efficiency Motor	

1. Weights for options are approximate.
2. Weights for options that are not list refer to Installation guide.



PACKAGED GAS/ELECTRIC
RIGGING AND CENTER OF GRAVITY



CORNER WEIGHT

Base Unit and Corner Weights only

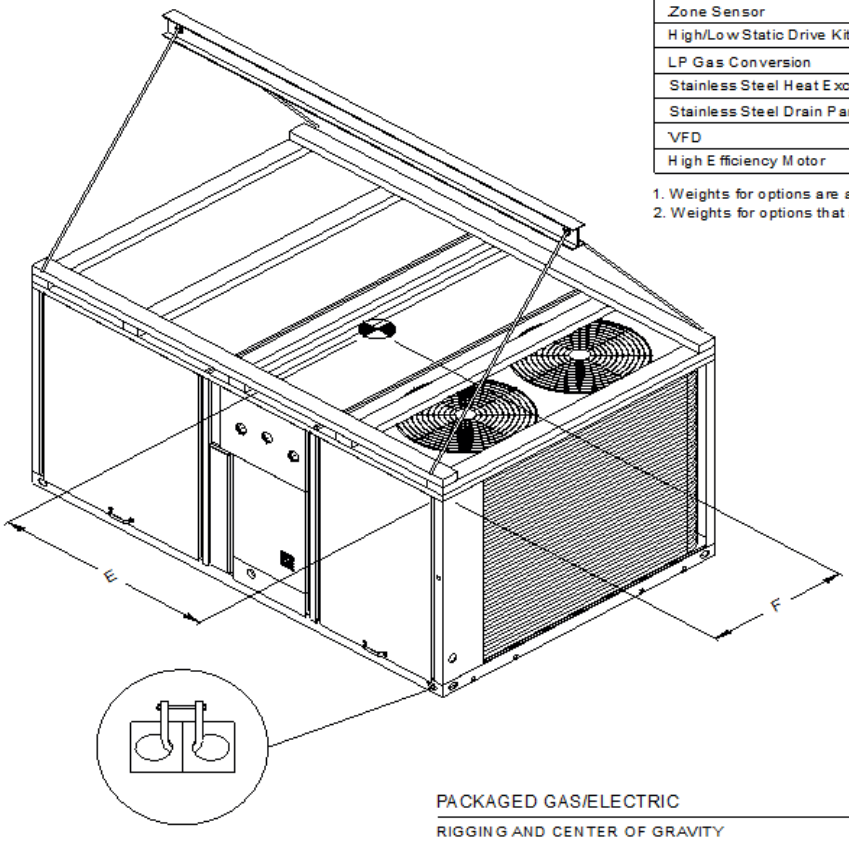
Base unit weights		Corner Weights				Center of Gravity	
SHIPPING	NET	(A)	(B)	(C)	(D)	E	F
2465.0 lb	2034.0 lb	722.0 lb	487.0 lb	354.0 lb	478.0 lb	54"	34"

1. All weights are approximate.
2. The actual weight are listed on the unit nameplate.
3. Refer to unit nameplate and installation guide for weights before scheduling transportation and installation of unit.
4. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10 % of the nameplate weight. .
5. Verify weight, connection, and all dimension with installer documents before installation.
6. Corner weights are given for information only.
7. Net/Shipping weight of optional accessories should be added to unit weight when ordering factory or field installed accessories.

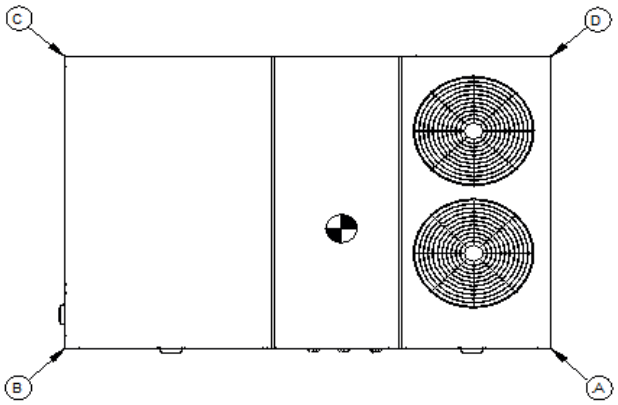
Installed Options Net Weight Data

Accessory	Weight
Economizer, Manual and Motorized Outside Air Damper	250.0 lb
Power Exhaust	
Roof Curb	
Oversized Motor	
Hail Guard	
Hinged Access Doors	27.0 lb
Power Conv. Outlet	
Through the Base Electrical	
Circuit Breaker	
Disconnect	
Smoke Detector	
Novar	
Zone Sensor	
High/Low Static Drive Kit	
LP Gas Conversion	
Stainless Steel Heat Exchanger	
Stainless Steel Drain Pan	50.0 lb
VFD	50.0 lb
High Efficiency Motor	

1. Weights for options are approximate.
2. Weights for options that are not list refer to Installation guide.



PACKAGED GAS/ELECTRIC
RIGGING AND CENTER OF GRAVITY



CORNER WEIGHT

Base Unit and Corner Weights only

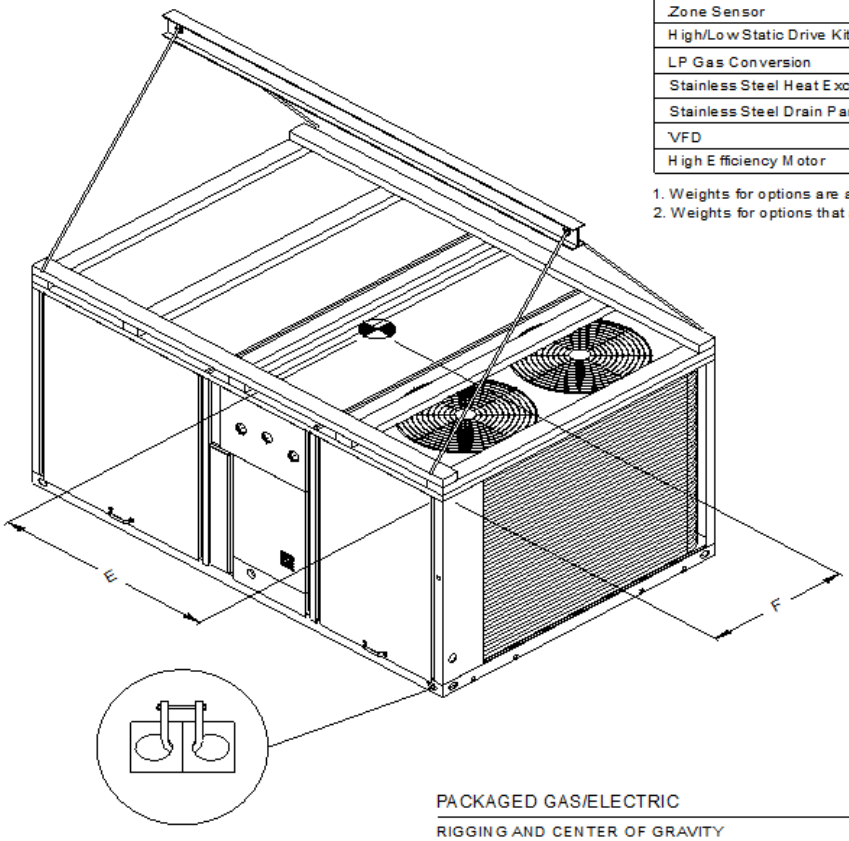
Base unit weights		Corner Weights				Center of Gravity	
SHIPPING	NET	(A)	(B)	(C)	(D)	E	F
2609.0 lb	2166"	771"	514.0 lb	378.0 lb	503.0 lb	55"	34"

1. All weights are approximate.
2. The actual weight are listed on the unit nameplate.
3. Refer to unit nameplate and installation guide for weights before scheduling transportation and installation of unit.
4. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10 % of the nameplate weight. .
5. Verify weight, connection, and all dimension with installer documents before installation.
6. Corner weights are given for information only.
7. Net/Shipping weight of optional accessories should be added to unit weight when ordering factory or field installed accessories.

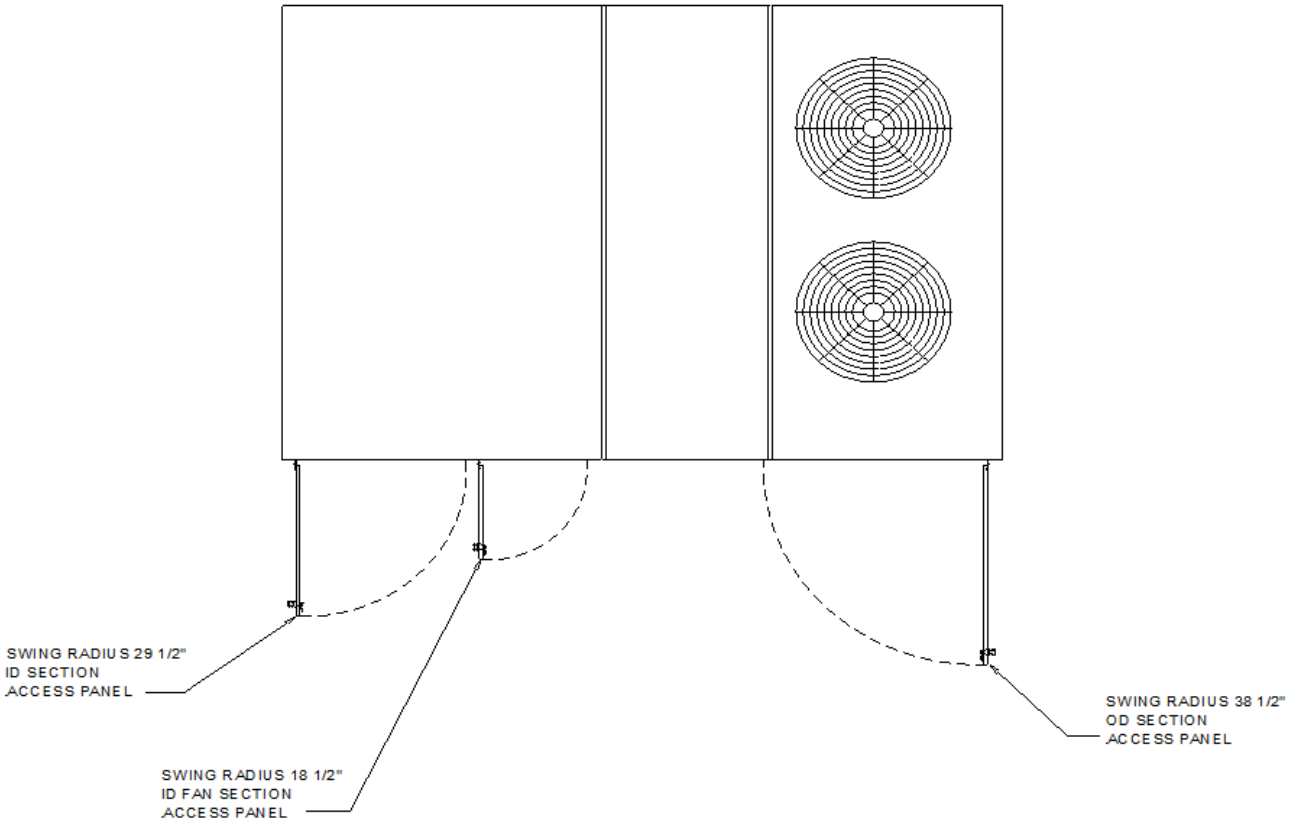
Installed Options Net Weight Data

Accessory	Weight
Economizer, Manual and Motorized Outside Air Damper	250.0 lb
Power Exhaust	
Roof Curb	
Oversized Motor	5.0 lb
Hail Guard	
Hinged Access Doors	27.0 lb
Power Conv. Outlet	
Through the Base Electrical	
Circuit Breaker	
Disconnect	
Smoke Detector	
Novar	
Zone Sensor	
High/Low Static Drive Kit	
LP Gas Conversion	
Stainless Steel Heat Exchanger	
Stainless Steel Drain Pan	50.0 lb
VFD	
High Efficiency Motor	49.0 lb

1. Weights for options are approximate.
2. Weights for options that are not list refer to Installation guide.

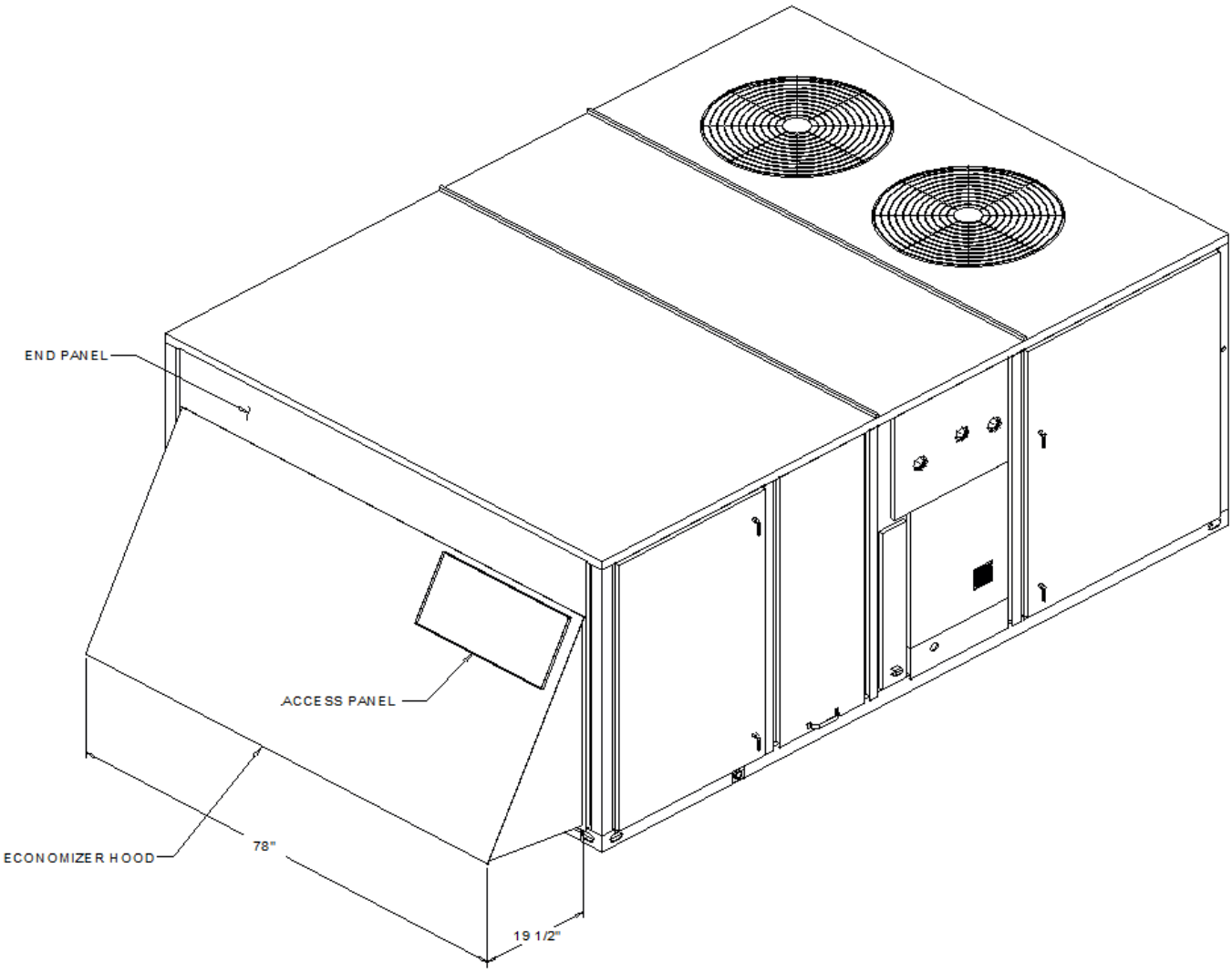


PACKAGED GAS/ELECTRIC
RIGGING AND CENTER OF GRAVITY



HINGGING ACCESS DOORS

ACCESSORY



ECONOMIZER HOOD

PLAN VIEW DRAWING

Job01

Tag	**RTU 4-2**		
Quantity	**1**	Model number	**YHD180G4RX**

Unit Information

Tonnage	**15 Ton**	Unit function	**Gas/Electric**
Min. Unit Operating Weight	**2241.0 lb**	Max Unit Operating Weight	**2663.0 lb**
Design Airflow	**6000 cfm**		

Cooling Information

Gross Total Capacity	**176.64 MBh**	Gross Sensible Capacity	**133.59 MBh**
Gross Latent Capacity	**43.06 MBh**	Net Total Capacity	**165.14 MBh**
Net Sensible Capacity	**122.08 MBh**	Net Sensible Heat Ratio	**0.74 Number**
Cooling Entering Dry Bulb	**77.60 F**	Cooling Entering Wet Bulb	**63.94 F**
Evap Coil Leav Air Temp (DB)	**56.98 F**	Cooling Leaving Unit DB	**59.11 F**
Evap Coil Leav Air Temp (WB)	**53.80 F**	Cooling Leaving Unit WB	**54.67 F**
Ambient Temp	**95.00 F**		

Dehumidification Information

Cooling LDB with Reheat	**75.18 F**	Leaving Unit Rel. Humid w/Reheat	**43.46 %**
Evap Coil Leav Air Temp (DB)	**56.98 F**	Evap Coil Leav Air Temp (WB)	**53.80 F**
Reheat Capacity	**118.47 MBh**	Reheat Temp Rise	**18.20 F**
Dew Point Temp	**51.48 F**	Moisture Removal Rate (gal/hr)	**4.87 gph**

Heating Information

Heating capacity	**Gas Heat - SS Ht Ex - Low**	Output Htg Capacity	**200.00 MBh**
Output Htg Capacity w/Fan	**211.51 MBh**	Heating EAT	**53.40 F**
Heating LAT	**84.12 F**		

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**1.000 in H2O**
Indoor Motor Power	**2.72 kW**	Indoor Mtr. Operating Power	**3.65 bhp**
Indoor RPM	**742 rpm**	Outdoor Motor Power	**0.94 kW**
Compressor Power	**12.32 kW**	System Power	**15.99 kW**
MCA	**35.00 A**	MOP	**45.00 A**
Compressor 1 RLA	**12.20 A**	Compressor 2 RLA	**12.20 A**

Job01

Tag	**RTU 4-2**		
Quantity	**1**	Model number	**YHD180G4RX**

Evaprator Fan FLA	**4.80 A**	Condenser Fan FLA	**1.35 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**13.0 lb**	Refrig charge (HFC-410A) - ckt 2	**8.5 lb**
Compressor Power	**12.32 kW**	Outdoor Motor Power	**0.94 kW**
Rated capacity (AHRI)	**174.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**3.65 bhp**	SEER @ AHRI	

Job01

Tag	RTU 4-3A		
Quantity	1	Model number	YHD210G4RX

Unit Information

Tonnage	17.5 Ton	Unit function	Gas/Electric
Min. Unit Operating Weight	2205.0 lb	Max Unit Operating Weight	2723.0 lb
Design Airflow	7000 cfm		

Cooling Information

Gross Total Capacity	181.50 MBh	Gross Sensible Capacity	149.26 MBh
Gross Latent Capacity	32.23 MBh	Net Total Capacity	167.20 MBh
Net Sensible Capacity	134.97 MBh	Net Sensible Heat Ratio	0.81 Number
Cooling Entering Dry Bulb	77.60 F	Cooling Entering Wet Bulb	63.94 F
Evap Coil Leav Air Temp (DB)	57.86 F	Cooling Leaving Unit DB	60.05 F
Evap Coil Leav Air Temp (WB)	55.11 F	Cooling Leaving Unit WB	55.99 F
Ambient Temp	95.00 F		

Dehumidification Information

Cooling LDB with Reheat	82.34 F	Leaving Unit Rel. Humid w/Reheat	36.61 %
Evap Coil Leav Air Temp (DB)	57.86 F	Evap Coil Leav Air Temp (WB)	55.11 F
Reheat Capacity	185.97 MBh	Reheat Temp Rise	24.49 F
Dew Point Temp	53.21 F	Moisture Removal Rate (gal/hr)	3.64 gph

Heating Information

Heating capacity	Gas Heat - SS Ht Ex - Low	Output Htg Capacity	200.00 MBh
Output Htg Capacity w/Fan	214.30 MBh	Heating EAT	53.40 F
Heating LAT	79.73 F		

Motor/Electrical Information

Voltage	460/60/3	Design ESP	1.000 in H2O
Indoor Motor Power	3.38 kW	Indoor Mtr. Operating Power	4.54 bhp
Indoor RPM	777 rpm	Outdoor Motor Power	1.72 kW
Compressor Power	13.68 kW	System Power	18.78 kW
MCA	42.00 A	MOP	50.00 A
Compressor 1 RLA	14.10 A	Compressor 2 RLA	12.20 A

Job01

Tag	**RTU 4-3A**		
Quantity	**1**	Model number	**YHD210G4RX**

Evaprator Fan FLA	**7.60 A**	Condenser Fan FLA	**1.80 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**14.0 lb**	Refrig charge (HFC-410A) - ckt 2	**7.3 lb**
Compressor Power	**13.68 kW**	Outdoor Motor Power	**1.72 kW**
Rated capacity (AHRI)	**204.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**4.54 bhp**	SEER @ AHRI	

Job01

Tag	**RTU 4-3B**		
Quantity	**1**	Model number	**YHD210G4RX**

Unit Information

Tonnage	**17.5 Ton**	Unit function	**Gas/Electric**
Min. Unit Operating Weight	**2205.0 lb**	Max Unit Operating Weight	**2723.0 lb**
Design Airflow	**7000 cfm**		

Cooling Information

Gross Total Capacity	**181.50 MBh**	Gross Sensible Capacity	**149.26 MBh**
Gross Latent Capacity	**32.23 MBh**	Net Total Capacity	**167.20 MBh**
Net Sensible Capacity	**134.97 MBh**	Net Sensible Heat Ratio	**0.81 Number**
Cooling Entering Dry Bulb	**77.60 F**	Cooling Entering Wet Bulb	**63.94 F**
Evap Coil Leav Air Temp (DB)	**57.86 F**	Cooling Leaving Unit DB	**60.05 F**
Evap Coil Leav Air Temp (WB)	**55.11 F**	Cooling Leaving Unit WB	**55.99 F**
Ambient Temp	**95.00 F**		

Dehumidification Information

Cooling LDB with Reheat	**82.34 F**	Leaving Unit Rel. Humid w/Reheat	**36.61 %**
Evap Coil Leav Air Temp (DB)	**57.86 F**	Evap Coil Leav Air Temp (WB)	**55.11 F**
Reheat Capacity	**185.97 MBh**	Reheat Temp Rise	**24.49 F**
Dew Point Temp	**53.21 F**	Moisture Removal Rate (gal/hr)	**3.64 gph**

Heating Information

Heating capacity	**Gas Heat - SS Ht Ex - Low**	Output Htg Capacity	**200.00 MBh**
Output Htg Capacity w/Fan	**214.30 MBh**	Heating EAT	**53.40 F**
Heating LAT	**79.73 F**		

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**1.000 in H2O**
Indoor Motor Power	**3.38 kW**	Indoor Mtr. Operating Power	**4.54 bhp**
Indoor RPM	**777 rpm**	Outdoor Motor Power	**1.72 kW**
Compressor Power	**13.68 kW**	System Power	**18.78 kW**
MCA	**42.00 A**	MOP	**50.00 A**
Compressor 1 RLA	**14.10 A**	Compressor 2 RLA	**12.20 A**

Job01

Tag	**RTU 4-3B**		
Quantity	**1**	Model number	**YHD210G4RX**

Evaprator Fan FLA	**7.60 A**	Condenser Fan FLA	**1.80 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**14.0 lb**	Refrig charge (HFC-410A) - ckt 2	**7.3 lb**
Compressor Power	**13.68 kW**	Outdoor Motor Power	**1.72 kW**
Rated capacity (AHRI)	**204.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**4.54 bhp**	SEER @ AHRI	

Job01

Tag	**RTU 4-4**		
Quantity	**1**	Model number	**YHD150G4RX**

Unit Information

Tonnage	**12.5 Ton**	Unit function	**Gas/Electric**
Min. Unit Operating Weight	**2272.0 lb**	Max Unit Operating Weight	**2620.0 lb**
Design Airflow	**5000 cfm**		

Cooling Information

Gross Total Capacity	**143.29 MBh**	Gross Sensible Capacity	**106.82 MBh**
Gross Latent Capacity	**36.47 MBh**	Net Total Capacity	**134.43 MBh**
Net Sensible Capacity	**97.96 MBh**	Net Sensible Heat Ratio	**0.73 Number**
Cooling Entering Dry Bulb	**77.60 F**	Cooling Entering Wet Bulb	**63.94 F**
Evap Coil Leav Air Temp (DB)	**57.82 F**	Cooling Leaving Unit DB	**59.77 F**
Evap Coil Leav Air Temp (WB)	**54.10 F**	Cooling Leaving Unit WB	**54.89 F**
Ambient Temp	**95.00 F**		

Dehumidification Information

Cooling LDB with Reheat	**76.56 F**	Leaving Unit Rel. Humid w/Reheat	**41.39 %**
Evap Coil Leav Air Temp (DB)	**57.82 F**	Evap Coil Leav Air Temp (WB)	**54.10 F**
Reheat Capacity	**101.65 MBh**	Reheat Temp Rise	**18.74 F**
Dew Point Temp	**51.39 F**	Moisture Removal Rate (gal/hr)	**4.13 gph**

Heating Information

Heating capacity	**Gas Heat - SS Ht Ex - Low**	Output Htg Capacity	**120.00 MBh**
Output Htg Capacity w/Fan	**128.86 MBh**	Heating EAT	**53.40 F**
Heating LAT	**75.52 F**		

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**1.000 in H2O**
Indoor Motor Power	**2.10 kW**	Indoor Mtr. Operating Power	**2.81 bhp**
Indoor RPM	**762 rpm**	Outdoor Motor Power	**1.17 kW**
Compressor Power	**9.50 kW**	System Power	**12.77 kW**
MCA	**32.00 A**	MOP	**40.00 A**
Compressor 1 RLA	**10.60 A**	Compressor 2 RLA	**10.60 A**

Job01

Tag	**RTU 4-4**		
Quantity	**1**	Model number	**YHD150G4RX**

Evaprator Fan FLA	**4.80 A**	Condenser Fan FLA	**1.35 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**12.7 lb**	Refrig charge (HFC-410A) - ckt 2	**6.8 lb**
Compressor Power	**9.50 kW**	Outdoor Motor Power	**1.17 kW**
Rated capacity (AHRI)	**144.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**2.81 bhp**	SEER @ AHRI	

Job01

Tag	**RTU 4-5**		
Quantity	**1**	Model number	**YHD150G4RX**

Unit Information

Tonnage	**12.5 Ton**	Unit function	**Gas/Electric**
Min. Unit Operating Weight	**2272.0 lb**	Max Unit Operating Weight	**2620.0 lb**
Design Airflow	**5000 cfm**		

Cooling Information

Gross Total Capacity	**143.29 MBh**	Gross Sensible Capacity	**106.82 MBh**
Gross Latent Capacity	**36.47 MBh**	Net Total Capacity	**134.43 MBh**
Net Sensible Capacity	**97.96 MBh**	Net Sensible Heat Ratio	**0.73 Number**
Cooling Entering Dry Bulb	**77.60 F**	Cooling Entering Wet Bulb	**63.94 F**
Evap Coil Leav Air Temp (DB)	**57.82 F**	Cooling Leaving Unit DB	**59.77 F**
Evap Coil Leav Air Temp (WB)	**54.10 F**	Cooling Leaving Unit WB	**54.89 F**
Ambient Temp	**95.00 F**		

Dehumidification Information

Cooling LDB with Reheat	**76.56 F**	Leaving Unit Rel. Humid w/Reheat	**41.39 %**
Evap Coil Leav Air Temp (DB)	**57.82 F**	Evap Coil Leav Air Temp (WB)	**54.10 F**
Reheat Capacity	**101.65 MBh**	Reheat Temp Rise	**18.74 F**
Dew Point Temp	**51.39 F**	Moisture Removal Rate (gal/hr)	**4.13 gph**

Heating Information

Heating capacity	**Gas Heat - SS Ht Ex - Low**	Output Htg Capacity	**120.00 MBh**
Output Htg Capacity w/Fan	**128.86 MBh**	Heating EAT	**53.40 F**
Heating LAT	**75.52 F**		

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**1.000 in H2O**
Indoor Motor Power	**2.10 kW**	Indoor Mtr. Operating Power	**2.81 bhp**
Indoor RPM	**762 rpm**	Outdoor Motor Power	**1.17 kW**
Compressor Power	**9.50 kW**	System Power	**12.77 kW**
MCA	**32.00 A**	MOP	**40.00 A**
Compressor 1 RLA	**10.60 A**	Compressor 2 RLA	**10.60 A**

Job01

Tag	**RTU 4-5**		
Quantity	**1**	Model number	**YHD150G4RX**

Evaprator Fan FLA	**4.80 A**	Condenser Fan FLA	**1.35 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**12.7 lb**	Refrig charge (HFC-410A) - ckt 2	**6.8 lb**
Compressor Power	**9.50 kW**	Outdoor Motor Power	**1.17 kW**
Rated capacity (AHRI)	**144.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**2.81 bhp**	SEER @ AHRI	

Job01

Tag	**RTU 4-6**		
Quantity	**1**	Model number	**YHD240G4RX**

Unit Information

Tonnage	**20 Ton**	Unit function	**Gas/Electric**
Min. Unit Operating Weight	**2276.0 lb**	Max Unit Operating Weight	**2824.0 lb**
Design Airflow	**8000 cfm**		

Cooling Information

Gross Total Capacity	**242.72 MBh**	Gross Sensible Capacity	**174.14 MBh**
Gross Latent Capacity	**68.58 MBh**	Net Total Capacity	**222.87 MBh**
Net Sensible Capacity	**154.29 MBh**	Net Sensible Heat Ratio	**0.69 Number**
Cooling Entering Dry Bulb	**77.60 F**	Cooling Entering Wet Bulb	**63.94 F**
Evap Coil Leav Air Temp (DB)	**57.44 F**	Cooling Leaving Unit DB	**60.06 F**
Evap Coil Leav Air Temp (WB)	**53.46 F**	Cooling Leaving Unit WB	**54.54 F**
Ambient Temp	**95.00 F**		

Dehumidification Information

Cooling LDB with Reheat	**76.24 F**	Leaving Unit Rel. Humid w/Reheat	**40.46 %**
Evap Coil Leav Air Temp (DB)	**57.44 F**	Evap Coil Leav Air Temp (WB)	**53.46 F**
Reheat Capacity	**163.13 MBh**	Reheat Temp Rise	**18.79 F**
Dew Point Temp	**50.49 F**	Moisture Removal Rate (gal/hr)	**7.76 gph**

Heating Information

Heating capacity	**Gas Heat - SS Ht Ex - Low**	Output Htg Capacity	**200.00 MBh**
Output Htg Capacity w/Fan	**219.85 MBh**	Heating EAT	**53.40 F**
Heating LAT	**76.44 F**		

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**1.000 in H2O**
Indoor Motor Power	**4.69 kW**	Indoor Mtr. Operating Power	**6.30 bhp**
Indoor RPM	**858 rpm**	Outdoor Motor Power	**2.12 kW**
Compressor Power	**17.39 kW**	System Power	**24.20 kW**
MCA	**57.00 A**	MOP	**70.00 A**
Compressor 1 RLA	**18.60 A**	Compressor 2 RLA	**18.60 A**

Job01

Tag	**RTU 4-6**		
Quantity	**1**	Model number	**YHD240G4RX**

Evaprator Fan FLA	**11.00 A**	Condenser Fan FLA	**1.80 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**15.5 lb**	Refrig charge (HFC-410A) - ckt 2	**7.5 lb**
Compressor Power	**17.39 kW**	Outdoor Motor Power	**2.12 kW**
Rated capacity (AHRI)	**234.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**6.30 bhp**	SEER @ AHRI	

Job01

Tag	RTU 4-7A		
Quantity	1	Model number	YHD240G4RX

Unit Information

Tonnage	20 Ton	Unit function	Gas/Electric
Min. Unit Operating Weight	2276.0 lb	Max Unit Operating Weight	2824.0 lb
Design Airflow	8000 cfm		

Cooling Information

Gross Total Capacity	242.72 MBh	Gross Sensible Capacity	174.14 MBh
Gross Latent Capacity	68.58 MBh	Net Total Capacity	222.87 MBh
Net Sensible Capacity	154.29 MBh	Net Sensible Heat Ratio	0.69 Number
Cooling Entering Dry Bulb	77.60 F	Cooling Entering Wet Bulb	63.94 F
Evap Coil Leav Air Temp (DB)	57.44 F	Cooling Leaving Unit DB	60.06 F
Evap Coil Leav Air Temp (WB)	53.46 F	Cooling Leaving Unit WB	54.54 F
Ambient Temp	95.00 F		

Dehumidification Information

Cooling LDB with Reheat	76.24 F	Leaving Unit Rel. Humid w/Reheat	40.46 %
Evap Coil Leav Air Temp (DB)	57.44 F	Evap Coil Leav Air Temp (WB)	53.46 F
Reheat Capacity	163.13 MBh	Reheat Temp Rise	18.79 F
Dew Point Temp	50.49 F	Moisture Removal Rate (gal/hr)	7.76 gph

Heating Information

Heating capacity	Gas Heat - SS Ht Ex - Low	Output Htg Capacity	200.00 MBh
Output Htg Capacity w/Fan	219.85 MBh	Heating EAT	53.40 F
Heating LAT	76.44 F		

Motor/Electrical Information

Voltage	460/60/3	Design ESP	1.000 in H2O
Indoor Motor Power	4.69 kW	Indoor Mtr. Operating Power	6.30 bhp
Indoor RPM	858 rpm	Outdoor Motor Power	2.12 kW
Compressor Power	17.39 kW	System Power	24.20 kW
MCA	57.00 A	MOP	70.00 A
Compressor 1 RLA	18.60 A	Compressor 2 RLA	18.60 A

Job01

Tag	**RTU 4-7A**		
Quantity	**1**	Model number	**YHD240G4RX**

Evaprator Fan FLA	**11.00 A**	Condenser Fan FLA	**1.80 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**15.5 lb**	Refrig charge (HFC-410A) - ckt 2	**7.5 lb**
Compressor Power	**17.39 kW**	Outdoor Motor Power	**2.12 kW**
Rated capacity (AHRI)	**234.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**6.30 bhp**	SEER @ AHRI	

Job01

Tag	**RTU 4-7B**		
Quantity	**1**	Model number	**YHD240G4RX**

Unit Information

Tonnage	**20 Ton**	Unit function	**Gas/Electric**
Min. Unit Operating Weight	**2276.0 lb**	Max Unit Operating Weight	**2824.0 lb**
Design Airflow	**8000 cfm**		

Cooling Information

Gross Total Capacity	**242.72 MBh**	Gross Sensible Capacity	**174.14 MBh**
Gross Latent Capacity	**68.58 MBh**	Net Total Capacity	**222.87 MBh**
Net Sensible Capacity	**154.29 MBh**	Net Sensible Heat Ratio	**0.69 Number**
Cooling Entering Dry Bulb	**77.60 F**	Cooling Entering Wet Bulb	**63.94 F**
Evap Coil Leav Air Temp (DB)	**57.44 F**	Cooling Leaving Unit DB	**60.06 F**
Evap Coil Leav Air Temp (WB)	**53.46 F**	Cooling Leaving Unit WB	**54.54 F**
Ambient Temp	**95.00 F**		

Dehumidification Information

Cooling LDB with Reheat	**76.24 F**	Leaving Unit Rel. Humid w/Reheat	**40.46 %**
Evap Coil Leav Air Temp (DB)	**57.44 F**	Evap Coil Leav Air Temp (WB)	**53.46 F**
Reheat Capacity	**163.13 MBh**	Reheat Temp Rise	**18.79 F**
Dew Point Temp	**50.49 F**	Moisture Removal Rate (gal/hr)	**7.76 gph**

Heating Information

Heating capacity	**Gas Heat - SS Ht Ex - Low**	Output Htg Capacity	**200.00 MBh**
Output Htg Capacity w/Fan	**219.85 MBh**	Heating EAT	**53.40 F**
Heating LAT	**76.44 F**		

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**1.000 in H2O**
Indoor Motor Power	**4.69 kW**	Indoor Mtr. Operating Power	**6.30 bhp**
Indoor RPM	**858 rpm**	Outdoor Motor Power	**2.12 kW**
Compressor Power	**17.39 kW**	System Power	**24.20 kW**
MCA	**57.00 A**	MOP	**70.00 A**
Compressor 1 RLA	**18.60 A**	Compressor 2 RLA	**18.60 A**

Job01

Tag	**RTU 4-7B**		
Quantity	**1**	Model number	**YHD240G4RX**

Evaprator Fan FLA	**11.00 A**	Condenser Fan FLA	**1.80 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**15.5 lb**	Refrig charge (HFC-410A) - ckt 2	**7.5 lb**
Compressor Power	**17.39 kW**	Outdoor Motor Power	**2.12 kW**
Rated capacity (AHRI)	**234.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**6.30 bhp**	SEER @ AHRI	

Job01

Tag	**RTU 4-8**		
Quantity	**1**	Model number	**YHD210G4RX**

Unit Information

Tonnage	**17.5 Ton**	Unit function	**Gas/Electric**
Min. Unit Operating Weight	**2205.0 lb**	Max Unit Operating Weight	**2723.0 lb**
Design Airflow	**7000 cfm**		

Cooling Information

Gross Total Capacity	**181.50 MBh**	Gross Sensible Capacity	**149.26 MBh**
Gross Latent Capacity	**32.23 MBh**	Net Total Capacity	**167.20 MBh**
Net Sensible Capacity	**134.97 MBh**	Net Sensible Heat Ratio	**0.81 Number**
Cooling Entering Dry Bulb	**77.60 F**	Cooling Entering Wet Bulb	**63.94 F**
Evap Coil Leav Air Temp (DB)	**57.86 F**	Cooling Leaving Unit DB	**60.05 F**
Evap Coil Leav Air Temp (WB)	**55.11 F**	Cooling Leaving Unit WB	**55.99 F**
Ambient Temp	**95.00 F**		

Dehumidification Information

Cooling LDB with Reheat	**82.34 F**	Leaving Unit Rel. Humid w/Reheat	**36.61 %**
Evap Coil Leav Air Temp (DB)	**57.86 F**	Evap Coil Leav Air Temp (WB)	**55.11 F**
Reheat Capacity	**185.97 MBh**	Reheat Temp Rise	**24.49 F**
Dew Point Temp	**53.21 F**	Moisture Removal Rate (gal/hr)	**3.64 gph**

Heating Information

Heating capacity	**Gas Heat - SS Ht Ex - Low**	Output Htg Capacity	**200.00 MBh**
Output Htg Capacity w/Fan	**214.30 MBh**	Heating EAT	**53.40 F**
Heating LAT	**79.73 F**		

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**1.000 in H2O**
Indoor Motor Power	**3.38 kW**	Indoor Mtr. Operating Power	**4.54 bhp**
Indoor RPM	**777 rpm**	Outdoor Motor Power	**1.72 kW**
Compressor Power	**13.68 kW**	System Power	**18.78 kW**
MCA	**42.00 A**	MOP	**50.00 A**
Compressor 1 RLA	**14.10 A**	Compressor 2 RLA	**12.20 A**

Job01

Tag	**RTU 4-8**		
Quantity	**1**	Model number	**YHD210G4RX**

Evaprator Fan FLA	**7.60 A**	Condenser Fan FLA	**1.80 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**14.0 lb**	Refrig charge (HFC-410A) - ckt 2	**7.3 lb**
Compressor Power	**13.68 kW**	Outdoor Motor Power	**1.72 kW**
Rated capacity (AHRI)	**204.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**4.54 bhp**	SEER @ AHRI	

Job01

Tag	**RTU 5-3**		
Quantity	**1**	Model number	**YHD240G4RX**

Unit Information

Tonnage	**20 Ton**	Unit function	**Gas/Electric**
Min. Unit Operating Weight	**2276.0 lb**	Max Unit Operating Weight	**2824.0 lb**
Design Airflow	**9000 cfm**		

Cooling Information

Gross Total Capacity	**248.10 MBh**	Gross Sensible Capacity	**181.64 MBh**
Gross Latent Capacity	**66.46 MBh**	Net Total Capacity	**224.16 MBh**
Net Sensible Capacity	**157.70 MBh**	Net Sensible Heat Ratio	**0.70 Number**
Cooling Entering Dry Bulb	**77.60 F**	Cooling Entering Wet Bulb	**63.94 F**
Evap Coil Leav Air Temp (DB)	**58.91 F**	Cooling Leaving Unit DB	**61.63 F**
Evap Coil Leav Air Temp (WB)	**54.51 F**	Cooling Leaving Unit WB	**55.61 F**
Ambient Temp	**95.00 F**		

Dehumidification Information

Cooling LDB with Reheat	**75.94 F**	Leaving Unit Rel. Humid w/Reheat	**42.16 %**
Evap Coil Leav Air Temp (DB)	**58.91 F**	Evap Coil Leav Air Temp (WB)	**54.51 F**
Reheat Capacity	**166.25 MBh**	Reheat Temp Rise	**17.02 F**
Dew Point Temp	**51.33 F**	Moisture Removal Rate (gal/hr)	**7.52 gph**

Heating Information

Heating capacity	**Gas Heat - SS Ht Ex - Low**	Output Htg Capacity	**200.00 MBh**
Output Htg Capacity w/Fan	**223.94 MBh**	Heating EAT	**53.40 F**
Heating LAT	**73.88 F**		

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**0.800 in H2O**
Indoor Motor Power	**5.66 kW**	Indoor Mtr. Operating Power	**7.60 bhp**
Indoor RPM	**892 rpm**	Outdoor Motor Power	**2.11 kW**
Compressor Power	**17.48 kW**	System Power	**25.26 kW**
MCA	**57.00 A**	MOP	**70.00 A**
Compressor 1 RLA	**18.60 A**	Compressor 2 RLA	**18.60 A**

Job01

Tag	**RTU 5-3**		
Quantity	**1**	Model number	**YHD240G4RX**

Evaprator Fan FLA	**11.00 A**	Condenser Fan FLA	**1.80 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**15.5 lb**	Refrig charge (HFC-410A) - ckt 2	**7.5 lb**
Compressor Power	**17.48 kW**	Outdoor Motor Power	**2.11 kW**
Rated capacity (AHRI)	**234.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**7.60 bhp**	SEER @ AHRI	

Job01

Tag	**RTU 5-4**		
Quantity	**1**	Model number	**YHD180G4RX**

Unit Information

Tonnage	**15 Ton**	Unit function	**Gas/Electric**
Min. Unit Operating Weight	**2241.0 lb**	Max Unit Operating Weight	**2663.0 lb**
Design Airflow	**6000 cfm**		

Cooling Information

Gross Total Capacity	**176.64 MBh**	Gross Sensible Capacity	**133.59 MBh**
Gross Latent Capacity	**43.06 MBh**	Net Total Capacity	**165.14 MBh**
Net Sensible Capacity	**122.08 MBh**	Net Sensible Heat Ratio	**0.74 Number**
Cooling Entering Dry Bulb	**77.60 F**	Cooling Entering Wet Bulb	**63.94 F**
Evap Coil Leav Air Temp (DB)	**56.98 F**	Cooling Leaving Unit DB	**59.11 F**
Evap Coil Leav Air Temp (WB)	**53.80 F**	Cooling Leaving Unit WB	**54.67 F**
Ambient Temp	**95.00 F**		

Dehumidification Information

Cooling LDB with Reheat	**75.18 F**	Leaving Unit Rel. Humid w/Reheat	**43.46 %**
Evap Coil Leav Air Temp (DB)	**56.98 F**	Evap Coil Leav Air Temp (WB)	**53.80 F**
Reheat Capacity	**118.47 MBh**	Reheat Temp Rise	**18.20 F**
Dew Point Temp	**51.48 F**	Moisture Removal Rate (gal/hr)	**4.87 gph**

Heating Information

Heating capacity	**Gas Heat - SS Ht Ex - Low**	Output Htg Capacity	**200.00 MBh**
Output Htg Capacity w/Fan	**211.51 MBh**	Heating EAT	**53.40 F**
Heating LAT	**84.12 F**		

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**1.000 in H2O**
Indoor Motor Power	**2.72 kW**	Indoor Mtr. Operating Power	**3.65 bhp**
Indoor RPM	**742 rpm**	Outdoor Motor Power	**0.94 kW**
Compressor Power	**12.32 kW**	System Power	**15.99 kW**
MCA	**35.00 A**	MOP	**45.00 A**
Compressor 1 RLA	**12.20 A**	Compressor 2 RLA	**12.20 A**

Job01

Tag	**RTU 5-4**		
Quantity	**1**	Model number	**YHD180G4RX**

Evaprator Fan FLA	**4.80 A**	Condenser Fan FLA	**1.35 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**13.0 lb**	Refrig charge (HFC-410A) - ckt 2	**8.5 lb**
Compressor Power	**12.32 kW**	Outdoor Motor Power	**0.94 kW**
Rated capacity (AHRI)	**174.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**3.65 bhp**	SEER @ AHRI	

Job01

Tag	RTU 5-5		
Quantity	1	Model number	YHD180G4RX

Unit Information

Tonnage	15 Ton	Unit function	Gas/Electric
Min. Unit Operating Weight	2241.0 lb	Max Unit Operating Weight	2663.0 lb
Design Airflow	5250 cfm		

Cooling Information

Gross Total Capacity	171.76 MBh	Gross Sensible Capacity	126.36 MBh
Gross Latent Capacity	45.40 MBh	Net Total Capacity	162.54 MBh
Net Sensible Capacity	117.14 MBh	Net Sensible Heat Ratio	0.72 Number
Cooling Entering Dry Bulb	77.60 F	Cooling Entering Wet Bulb	63.94 F
Evap Coil Leav Air Temp (DB)	55.31 F	Cooling Leaving Unit DB	57.38 F
Evap Coil Leav Air Temp (WB)	52.54 F	Cooling Leaving Unit WB	53.40 F
Ambient Temp	95.00 F		

Dehumidification Information

Cooling LDB with Reheat	75.75 F	Leaving Unit Rel. Humid w/Reheat	41.04 %
Evap Coil Leav Air Temp (DB)	55.31 F	Evap Coil Leav Air Temp (WB)	52.54 F
Reheat Capacity	116.41 MBh	Reheat Temp Rise	20.44 F
Dew Point Temp	50.44 F	Moisture Removal Rate (gal/hr)	5.14 gph

Heating Information

Heating capacity	Gas Heat - SS Ht Ex - Low	Output Htg Capacity	200.00 MBh
Output Htg Capacity w/Fan	209.23 MBh	Heating EAT	53.40 F
Heating LAT	88.51 F		

Motor/Electrical Information

Voltage	460/60/3	Design ESP	1.000 in H2O
Indoor Motor Power	2.18 kW	Indoor Mtr. Operating Power	2.93 bhp
Indoor RPM	701 rpm	Outdoor Motor Power	0.94 kW
Compressor Power	12.27 kW	System Power	15.40 kW
MCA	35.00 A	MOP	45.00 A
Compressor 1 RLA	12.20 A	Compressor 2 RLA	12.20 A

Job01

Tag	**RTU 5-5**		
Quantity	**1**	Model number	**YHD180G4RX**

Evaprator Fan FLA	**4.80 A**	Condenser Fan FLA	**1.35 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**13.0 lb**	Refrig charge (HFC-410A) - ckt 2	**8.5 lb**
Compressor Power	**12.27 kW**	Outdoor Motor Power	**0.94 kW**
Rated capacity (AHRI)	**174.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**2.93 bhp**	SEER @ AHRI	

Job01

Tag	RTU 5-6		
Quantity	1	Model number	YHD150G4RX

Unit Information

Tonnage	12.5 Ton	Unit function	Gas/Electric
Min. Unit Operating Weight	2272.0 lb	Max Unit Operating Weight	2620.0 lb
Design Airflow	4500 cfm		

Cooling Information

Gross Total Capacity	139.99 MBh	Gross Sensible Capacity	102.20 MBh
Gross Latent Capacity	37.79 MBh	Net Total Capacity	132.38 MBh
Net Sensible Capacity	94.59 MBh	Net Sensible Heat Ratio	0.71 Number
Cooling Entering Dry Bulb	77.60 F	Cooling Entering Wet Bulb	63.94 F
Evap Coil Leav Air Temp (DB)	56.57 F	Cooling Leaving Unit DB	58.51 F
Evap Coil Leav Air Temp (WB)	53.16 F	Cooling Leaving Unit WB	53.97 F
Ambient Temp	95.00 F		

Dehumidification Information

Cooling LDB with Reheat	77.06 F	Leaving Unit Rel. Humid w/Reheat	39.55 %
Evap Coil Leav Air Temp (DB)	56.57 F	Evap Coil Leav Air Temp (WB)	53.16 F
Reheat Capacity	100.03 MBh	Reheat Temp Rise	20.49 F
Dew Point Temp	50.62 F	Moisture Removal Rate (gal/hr)	4.27 gph

Heating Information

Heating capacity	Gas Heat - SS Ht Ex - Low	Output Htg Capacity	120.00 MBh
Output Htg Capacity w/Fan	127.61 MBh	Heating EAT	53.40 F
Heating LAT	77.98 F		

Motor/Electrical Information

Voltage	460/60/3	Design ESP	1.000 in H2O
Indoor Motor Power	1.80 kW	Indoor Mtr. Operating Power	2.42 bhp
Indoor RPM	736 rpm	Outdoor Motor Power	1.18 kW
Compressor Power	9.47 kW	System Power	12.45 kW
MCA	32.00 A	MOP	40.00 A
Compressor 1 RLA	10.60 A	Compressor 2 RLA	10.60 A

Job01

Tag	**RTU 5-6**		
Quantity	**1**	Model number	**YHD150G4RX**

Evaprator Fan FLA	**4.80 A**	Condenser Fan FLA	**1.35 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**12.7 lb**	Refrig charge (HFC-410A) - ckt 2	**6.8 lb**
Compressor Power	**9.47 kW**	Outdoor Motor Power	**1.18 kW**
Rated capacity (AHRI)	**144.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**2.42 bhp**	SEER @ AHRI	

Job01

Tag	**RTU 5-7A**		
Quantity	**1**	Model number	**YHD240G4RX**

Unit Information

Tonnage	**20 Ton**	Unit function	**Gas/Electric**
Min. Unit Operating Weight	**2276.0 lb**	Max Unit Operating Weight	**2824.0 lb**
Design Airflow	**8000 cfm**		

Cooling Information

Gross Total Capacity	**242.72 MBh**	Gross Sensible Capacity	**174.14 MBh**
Gross Latent Capacity	**68.58 MBh**	Net Total Capacity	**222.87 MBh**
Net Sensible Capacity	**154.29 MBh**	Net Sensible Heat Ratio	**0.69 Number**
Cooling Entering Dry Bulb	**77.60 F**	Cooling Entering Wet Bulb	**63.94 F**
Evap Coil Leav Air Temp (DB)	**57.44 F**	Cooling Leaving Unit DB	**60.06 F**
Evap Coil Leav Air Temp (WB)	**53.46 F**	Cooling Leaving Unit WB	**54.54 F**
Ambient Temp	**95.00 F**		

Dehumidification Information

Cooling LDB with Reheat	**76.24 F**	Leaving Unit Rel. Humid w/Reheat	**40.46 %**
Evap Coil Leav Air Temp (DB)	**57.44 F**	Evap Coil Leav Air Temp (WB)	**53.46 F**
Reheat Capacity	**163.13 MBh**	Reheat Temp Rise	**18.79 F**
Dew Point Temp	**50.49 F**	Moisture Removal Rate (gal/hr)	**7.76 gph**

Heating Information

Heating capacity	**Gas Heat - SS Ht Ex - Low**	Output Htg Capacity	**200.00 MBh**
Output Htg Capacity w/Fan	**219.85 MBh**	Heating EAT	**53.40 F**
Heating LAT	**76.44 F**		

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**1.000 in H2O**
Indoor Motor Power	**4.69 kW**	Indoor Mtr. Operating Power	**6.30 bhp**
Indoor RPM	**858 rpm**	Outdoor Motor Power	**2.12 kW**
Compressor Power	**17.39 kW**	System Power	**24.20 kW**
MCA	**57.00 A**	MOP	**70.00 A**
Compressor 1 RLA	**18.60 A**	Compressor 2 RLA	**18.60 A**

Job01

Tag	**RTU 5-7A**		
Quantity	**1**	Model number	**YHD240G4RX**

Evaprator Fan FLA	**11.00 A**	Condenser Fan FLA	**1.80 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**15.5 lb**	Refrig charge (HFC-410A) - ckt 2	**7.5 lb**
Compressor Power	**17.39 kW**	Outdoor Motor Power	**2.12 kW**
Rated capacity (AHRI)	**234.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**6.30 bhp**	SEER @ AHRI	

Job01

Tag	**RTU 5-7B**		
Quantity	**1**	Model number	**YHD240G4RX**

Unit Information

Tonnage	**20 Ton**	Unit function	**Gas/Electric**
Min. Unit Operating Weight	**2276.0 lb**	Max Unit Operating Weight	**2824.0 lb**
Design Airflow	**8000 cfm**		

Cooling Information

Gross Total Capacity	**242.72 MBh**	Gross Sensible Capacity	**174.14 MBh**
Gross Latent Capacity	**68.58 MBh**	Net Total Capacity	**222.87 MBh**
Net Sensible Capacity	**154.29 MBh**	Net Sensible Heat Ratio	**0.69 Number**
Cooling Entering Dry Bulb	**77.60 F**	Cooling Entering Wet Bulb	**63.94 F**
Evap Coil Leav Air Temp (DB)	**57.44 F**	Cooling Leaving Unit DB	**60.06 F**
Evap Coil Leav Air Temp (WB)	**53.46 F**	Cooling Leaving Unit WB	**54.54 F**
Ambient Temp	**95.00 F**		

Dehumidification Information

Cooling LDB with Reheat	**76.24 F**	Leaving Unit Rel. Humid w/Reheat	**40.46 %**
Evap Coil Leav Air Temp (DB)	**57.44 F**	Evap Coil Leav Air Temp (WB)	**53.46 F**
Reheat Capacity	**163.13 MBh**	Reheat Temp Rise	**18.79 F**
Dew Point Temp	**50.49 F**	Moisture Removal Rate (gal/hr)	**7.76 gph**

Heating Information

Heating capacity	**Gas Heat - SS Ht Ex - Low**	Output Htg Capacity	**200.00 MBh**
Output Htg Capacity w/Fan	**219.85 MBh**	Heating EAT	**53.40 F**
Heating LAT	**76.44 F**		

Motor/Electrical Information

Voltage	**460/60/3**	Design ESP	**1.000 in H2O**
Indoor Motor Power	**4.69 kW**	Indoor Mtr. Operating Power	**6.30 bhp**
Indoor RPM	**858 rpm**	Outdoor Motor Power	**2.12 kW**
Compressor Power	**17.39 kW**	System Power	**24.20 kW**
MCA	**57.00 A**	MOP	**70.00 A**
Compressor 1 RLA	**18.60 A**	Compressor 2 RLA	**18.60 A**

Job01

Tag	**RTU 5-7B**		
Quantity	**1**	Model number	**YHD240G4RX**

Evaprator Fan FLA	**11.00 A**	Condenser Fan FLA	**1.80 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**15.5 lb**	Refrig charge (HFC-410A) - ckt 2	**7.5 lb**
Compressor Power	**17.39 kW**	Outdoor Motor Power	**2.12 kW**
Rated capacity (AHRI)	**234.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**6.30 bhp**	SEER @ AHRI	

Job01

Tag	RTU 5-8		
Quantity	1	Model number	YHD210G4RX

Unit Information

Tonnage	17.5 Ton	Unit function	Gas/Electric
Min. Unit Operating Weight	2205.0 lb	Max Unit Operating Weight	2723.0 lb
Design Airflow	7000 cfm		

Cooling Information

Gross Total Capacity	181.50 MBh	Gross Sensible Capacity	149.26 MBh
Gross Latent Capacity	32.23 MBh	Net Total Capacity	167.20 MBh
Net Sensible Capacity	134.97 MBh	Net Sensible Heat Ratio	0.81 Number
Cooling Entering Dry Bulb	77.60 F	Cooling Entering Wet Bulb	63.94 F
Evap Coil Leav Air Temp (DB)	57.86 F	Cooling Leaving Unit DB	60.05 F
Evap Coil Leav Air Temp (WB)	55.11 F	Cooling Leaving Unit WB	55.99 F
Ambient Temp	95.00 F		

Dehumidification Information

Cooling LDB with Reheat	82.34 F	Leaving Unit Rel. Humid w/Reheat	36.61 %
Evap Coil Leav Air Temp (DB)	57.86 F	Evap Coil Leav Air Temp (WB)	55.11 F
Reheat Capacity	185.97 MBh	Reheat Temp Rise	24.49 F
Dew Point Temp	53.21 F	Moisture Removal Rate (gal/hr)	3.64 gph

Heating Information

Heating capacity	Gas Heat - SS Ht Ex - Low	Output Htg Capacity	200.00 MBh
Output Htg Capacity w/Fan	214.30 MBh	Heating EAT	53.40 F
Heating LAT	79.73 F		

Motor/Electrical Information

Voltage	460/60/3	Design ESP	1.000 in H2O
Indoor Motor Power	3.38 kW	Indoor Mtr. Operating Power	4.54 bhp
Indoor RPM	777 rpm	Outdoor Motor Power	1.72 kW
Compressor Power	13.68 kW	System Power	18.78 kW
MCA	42.00 A	MOP	50.00 A
Compressor 1 RLA	14.10 A	Compressor 2 RLA	12.20 A

Job01

Tag	**RTU 5-8**		
Quantity	**1**	Model number	**YHD210G4RX**

Evaprator Fan FLA	**7.60 A**	Condenser Fan FLA	**1.80 A**

LEED Information

ASHRAE 90.1	**Yes**		
Refrig charge (HFC-410A) - ckt 1	**14.0 lb**	Refrig charge (HFC-410A) - ckt 2	**7.3 lb**
Compressor Power	**13.68 kW**	Outdoor Motor Power	**1.72 kW**
Rated capacity (AHRI)	**204.00 MBh**	Exhaust fan power	**0.56 kW**
Indoor Mtr. Operating Power	**4.54 bhp**	SEER @ AHRI	

Job01

Tag	**RTU 5-8**		
Quantity	**1**	Model number	**YHD210G4RX**

TRANSPORTATION

The following statements are provided in accordance with the Section 14-526 of the ordinance.

TRANSPORTATION

(a) Transportation Standards

Transportation Analysis – Traffic Impact (14-526 (a) 1)

- *Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts*
- *Traffic Impact Study (Technical Manual, Section 1) if applicable*

1. *Impact on Surrounding Street Systems:*

   The surrounding street system consists of Fore Street. The proposed use is considered consistent with the zoning and objectives identified in various City reports; therefore, we believe it results in no significant impact to the surrounding street system. There will be two primary driveways into the site from Fore Street and each will have sight distance in each direction exceeding 200 feet. The easterly driveway will also function as a connector street to the future Thames Street Extension thus offering improved secondary access through the site as well as the adjacent City property and the 58 Fore Street property.

2. *Traffic Impact Study*

   A Traffic Assessment has been prepared by Traffic Solutions on September 25, 2018 and this assessment included trip generation and accident information for the site and surrounding area. The assessment concludes that the development is expected to generate a total of 81 new trips in the morning and 72 trips in the evening peak hour, thus a Traffic Movement Permit is not triggered.

   Any further traffic assessment is subject to the City's peer review.

Access and Circulation (14-526 (a) 2 a)

- *Access and internal circulation, addressing ADA access*
- *Access and egress impacts on traffic flows*
- *Description and use of drive-up features, if applicable*

3. *Access and Circulation:*
   a. Site Access and Circulation.

   (i) Vehicular access to the site is provided on the westerly and easterly ends of Fore Street at two locations. A new driveway located just west of the Mountfort/Fore Street intersection will provide access to the ground level parking to a small number of surface parking spaces. The easterly drive is

basically using the existing driveway and reconstructing it to meet City standards and to allow its future extension to the Thames Street Extension, south of the site. The easterly drive will have access to the 1st and 2nd levels of the parking garage and also to the main elevator/stairwell lobby for pedestrian access into the building. A third drive in to the site will consist of an existing curb opening and access to loading area at the west end of the existing building to remain. The owner is seeking to maintain the availability of the loading space to this building.

(ii) We believe the primary points of access will not conflict with any existing turning movements on Fore Street and the existing traffic flow on nearby streets. Ultimately the flow of traffic is expected to improve with the extension of Thames Street and the connection to Fore Street, thus the applicant's cooperation in allowing the through connection to Thames Street should be viewed as substantial contribution to the overall area circulation planning effort.

(iii) Not applicable as there are no drive through features proposed.

Loading and Servicing (14-526 (a) 2 b)

- *Loading and servicing needs, route and travel way geometrics for deliveries*
- *Turning templates for delivery vehicles, if applicable*

2. *Access and Circulation:*
   b. Loading and Servicing:

(i) Adequate provisions are made at the site for periodic loading from panel trucks to service the proposed uses. The site provides a clear area in front of an at grade at various points of the building for servicing and loading vehicles. Larger delivery vehicle access is not required for the new building, although the applicant requests approval to retain the existing curb cut/ driveway to access the loading area at the end of the existing building to remain.

Sidewalks (14-526 (a) 2 c)

- *Sidewalks and condition along street frontages and internal walkways*
- *Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)*

2. *Access and Circulation:*
   c. Sidewalks:

(i) The project will provide new brick sidewalks along Fore Street to replace the existing concrete sidewalks. New brick sidewalk will be provided along the easterly drive and this sidewalk is expected to ultimately be extended by the City to connect to the Thames Street Extension.

Public Transit (14-526 (a) 3), if applicable

- *Existing available transit services*
- *Proposed site plan design details, such as easement, pad base, and shelter*

3. Public Transit Access.

a. The project will include two floors of commercial space and three floors of parking. The development is not proposed along an existing public transit route to the best of our understanding although the METRO Route 1 and Route 8 are within 1,000 feet of the site.

b. There is an existing METRO stop located at Ocean Gateway which is less than 1000 foot distance from the site as well as a stop at the intersection of Congress and Mountfort Street.

c. A waiver of any further transit related activities is requested given the proximity of existing transit measures to the development.

Off-Street Parking: Vehicle & Motorcycle/Scooter (14-526 (a) 4 a and c)

- *Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements*
- *Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan*

4. Parking.
a. Location and Required Number of Vehicle Parking Spaces.
c. Motorcycles and Scooter Parking.

i. Off-street parking will be provided within the three floors of the building. The Applicant is proposing to provide 539 parking spaces within the garage and this amount exceeds the amount required under City code for the proposed office use. Between this site and the Ocean Gateway Garage, which are under common ownership, there will be 1,278 parking spaces under the control of the applicant. These parking facilities will meet the needs of the uses at 1 Hancock Street (WEX), the office uses at 100 Fore Street (including one level for additional WEX space), and various leases that the owner has in place for other area businesses and private parking needs.

ii. The Applicant and one tenant, WEX, are currently working with Cushman Transportation Consulting on the preparation of a Transportation Demand Management (TDM) plan that will look to implement various strategies for reducing the project's overall parking needs and traffic impacts in general. A complete TDM Plan was made part of the 1 Hancock Street development and the applicant's team will look to supplement that TDM plan to apply to the proposed office use at 100 Fore Street.

iii. Please see above.

iv. Parking aisles and dimensions will meet the applicable standards.

v. All new surface parking shall be paved.

The site plan has been developed to allow safe passage and parking for motorcycles and scooters in the garage or within the surface parking lot.

Bicycle Parking (14-526 (a) 4 b)

- *Address bicycle parking requirements and identify locations on-site*
- *Construction details for bike racks (Technical Manual, Section 1)*

4. Parking.
b. Location and Required Number of Bicycle Parking Spaces.

The project will provide various bike racks and secure storage spaces for bicycles. The location of these racks will be both within the exterior spaces, such as near entrances and also within the new building and the proposed fitness center space. Per Code Section 14-526 a.4.b (i) (b), the required number of bike spaces is 43 spaces, thus the Applicant is seeking a waiver of this required number of spaces, until the findings and full TDM plan are more fully developed.

Snow Storage (14-526 (a) 4 d)

- *Management plan for snow removal and locate snow storage areas on plans*

4. Parking.
d. Snow Storage.

i. Limited snow storage will be provided along the outside perimeter of the site (this will suffice for small storm events and temporary storage only).

ii. Snow removal and off-site disposal may be required for this site. The applicant will contract with a local snow removal company to perform these services.

iii. Snow removal from the top parking deck will involve pushing snow off the deck into a safe zone where removal into dump trucks can take place. This will also be completed under a private snow removal contract.

Traffic Demand Management (TDM) (14-526 (a) 5), if applicable

- *Develop TDM with Trip Reduction Targets and Strategies*

5. Transportation Demand Management (TDM).

a. A Transportation Demand Management (TDM) Plan will be prepared and submitted for Planning review within the upcoming application review period. Cushman Transportation Consulting is currently assisting in this effort.

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Preliminary Traffic Assessment

100 Fore Street Office Development Project

(September 25, 2018)

INTRODUCTION

100 Fore Street, LLC is proposing to construct a 77,000 square foot office building and a multi-level parking garage that includes 2,000 square feet of retail space at 100 Fore Street in the City of Portland. The garage structure will be three-floors with approximately 600 parking spaces. The subject property is identified as Lot 10 on City Tax Map 19, Block A.

Existing uses on the 2.97-acre development site include a 30,000 square foot single level multi-tenant retail/office building and a surface parking lot with a total of 136 spaces. The site currently is accessed from two driveway openings off Fore Street located at each end of the property. The current development plan demolishes the majority of the existing building displacing all of the existing building tenants. Approximately, 9,000sf of the existing building will be re-developed as a private fitness facility for tenants of the proposed office building.

The new 600 space three (3) level parking garage will require three access locations, as each parking deck will require independent access as there will be no interior access ramps. The ground level lot will be accessed from a new driveway located just west and opposite the Mountfort Street intersection along Fore Street. The first and second level decks will be accessed from the site's proposed easterly driveway. The easterly driveway will be constructed to satisfy City street standards as it may ultimately be extended to cross City land to the south and connect to the proposed Thames Street Extension, tentatively scheduled for construction by the City of Portland in 2019 or thereabouts. It is expected that Unified Parking Partners or similar operator will actively manage the garage operations including directional signage and related issues. The proposed office tenant is expected to lease spaces in the garage and spaces will also be open for public parking. Per section 14-332, the parking requirements for the 77,000 sf office will be 193 spaces, thus leaving approximately 407 spaces for other lease tenants and public parking in the nearby vicinity.

TRIP GENERATION

Proposed Development: The proposed multi-tenant office building project will include the following uses:

- Multi-tenant Office Space – 77,000 square feet

- Retail Space – 2,000 square feet
- Private Fitness Facility Space – 8,800 square feet [1]

NOTE: [1] The proposed fitness center space is provided exclusively for the tenants of the proposed 100 Fore Street Office Building and new building at 1 Hancock Street; therefore, additional or "new" vehicle trips are not generated by the proposed space.

Trip generation for the proposed multi-tenant office building was determined based upon trip tables presented in the seventh edition of the Institute of Transportation Engineers "**TRIP GENERATION**" handbook. The ITE publication provides numerous land use categories and the average volume of trips generated by each category.

The following trip rates were used to calculate trip generation for the proposed project:

Land Use #710 – General Office Building (77,000sf)

AM Peak Hour $Ln(T) = 0.80\ Ln(X) + 1.55$

PM Peak Hour $T = 1.12(X) + 78.81$

Land Use #714 – Specialty Retail (2,000sf)

AM Peak Hour = 2.71trips/1,000sf floor area [2]

PM Peak Hour = 2.71trips/1,000sf floor area

NOTE: [2] The ITE publication doesn't provide a trip rate for the AM peak hour; the estimate of trip generation for this land-use in the "morning" peak hour is based upon the trip rate noted for the PM peak hour.

Table 1, as follows, presents the estimated peak hour trip generation for the proposed 100 Fore Street Office Building project:

Table 1
100 Fore Street
Peak -Hour Trip Generation Estimates

Proposed Building Use	AM Peak Hour Trips	PM Peak Hour Trips
General Office	152 trips	165 trips
Specialty Retail	5 trips	5 trips
TOTAL Trips	**157 trips**	**170 trips**

The proposed office building project can be expected to generate a total of **157** trips during the "*morning*" peak hour and **170** vehicle trips in the "*evening*" peak hour.

Existing Site Trip Generation Credit: A total of four building tenants most recently occupied the existing 30,000 square foot building located on the 100 Fore Street site. The tenants and the approximate building space occupied are listed as follows:

Hamilton Marine = 20,000 square feet
Express Copy = 5,000 square feet
IBec Creative = 2,500 square feet

Jade Integrated Health = 2,500 square feet

Peak hour trip generation estimates were prepared for the existing building tenants based upon the following processes:

Hamilton Marine – A manual traffic count was conducted on Wednesday, August 29, 2018 that recorded all vehicle trips both entering and exiting the Hamilton Marine Retail Store during the morning and afternoon peak commuter hours. From a summary of the data, it was determined that the AM peak hour falls between 8:45 and 9:45 AM with a total of 22 vehicle trips recorded. The PM peak hour occurred between 3:30 and 4:30 PM with a total of 44 trips recorded.

Express Copy – Land-Use Code 110 General Light Industrial estimates a print shop can be expected to generate a total of 5 trips during both peak hour time periods.

IBec Creative /Jade Integrated Health – Manual traffic data was recorded at the common entry door to both building tenants on Wednesday September 19, 2018. A summary of the data shows a total of 21 vehicle trips were recorded in the morning peak hour (8:00 to 9:00 AM) and 24 trips were measured between 4:30 and 5:30 PM, the evening peak hour.

Table 2 provides a summary of the peak hour trips generated by the existing building tenants for both peak hour time periods.

Table 2
100 Fore Street
Existing Tenant - Peak Hour Trip Generation

Existing Building Tenant	AM Peak Hour Trips	PM Peak Hour Trips
Hamilton Marine	22 trips	44 trips
Express Copy	5 trips	5 trips
IBec/ Jade Integrated Health	21 trips	24 trips
TOTAL Trips	**48 trips**	**73 trips**

The existing site tenants generated a total of **48** vehicle trips in the AM peak hour and **73** trips in the PM peak hour.

Shared Use Trip Adjustment: A portion of the trips generated by the tenant space in the multi-tenant building will visit or travel to multiple destinations within the general geographic area of the proposed building. These multipurpose trips, if not accounted for, overestimate the traffic impact of the proposed site.

The City approved a trip reduction value of 15% for the 0 Hancock Street office building project presently under construction. Remaining consistent with the prior approval process, a shared use trip reduction value of 15%, or 16 trips in the morning peak hour and 15 trips in the evening peak hour, was applied.

Other Development Trip Reduction: Employees of the office building are expected and will be encouraged thru the implementation of a comprehensive Transportation Demand Management

Plan, to utilize other modes of transportation traveling to/from the proposed new site at 100 Fore Street. These other transportation modes include: transit, ridesharing, bicycle travel or walking. A trip reduction value of 12.8% was applied; again, consistent with the Other Modes reduction value approved for the 0 Hancock Street development. It should also be noted the April 18, 2018 Preliminary Traffic Assessment report prepared for the proposed Shipyard Re-development Project applied a 15% Other Modes reduction value to the proposed non-residential site uses. Accordingly, a trip reduction of 12 trips in the morning peak hour and 10 trips in the evening peak hour is applied to account for other modes of travel by employees of the proposed office building.

"Net" Site Trip Generation: The "*net*" change in peak hour trip generation for the proposed 100 Fore Street office building site is determined by subtracting the trip credits discussed in the previous sections of the report from the total trip generation estimates prepared for the proposed office building project. Table 3, below, summarizes that process:

Table 3
Peak Hour Trip Generation
Adjustment Summary

	AM Peak Hour	PM Peak Hour
Total Site Trip Generation	157 trips	170 trips

Site Trip Adjustments	AM Peak Hour	PM Peak Hour
- Existing Site Trip Reduction	-48	- 73
- Shared-use Adjustment	-16	-15
- Other Modes Adjustment	- 12	-10
Total Adjusted New Peak Hour Trips	**81 trips**	**72 trips**

As presented in the previous table, the proposed 100 Fore Street office building project is projected to generate a total of 81 new trips in the AM peak hour and 72 new trips during the PM peak hour. The site is therefore forecast to generate considerably less than 100 vehicle trips during either peak hour time period. As a result, a MaineDOT Traffic Movement Permit for the proposed site isn't required.

ROADWAY SAFETY

The Maine Department of Transportation's (MDOT) Accident Records Section provided the latest three-year (2015 through 2017) crash data for the following street segments in the general vicinity of the proposed project site:

Franklin Arterial – Middle Street to Commercial Street
India Street – Congress Street to Commercial Street

Hancock Street/Middle Street to Commercial Street/Thames Street
Mountfort Street – Congress Street to India Street
Middle Street – Franklin Arterial to Hancock Street
Fore Street – Franklin Arterial to Mountfort Street
Commercial Street – Franklin Arterial to India Street
Thames Street – India Street to Hancock Street

MaineDOT's safety audit is summarized as follows and attached as an appendix to the report:

2015 -2017 Traffic Accident Summary

Location	Total Crashes	Critical Rate Factor
1. Franklin Arterial @ Commercial Street	10	0.53
2. Franklin Arterial @ Fore Street	7	0.37
3. Franklin Arterial @ Middle Street	20	1.00
4. Congress Street @ India Street	11	0.70
5. Federal Street @ India Street	3	0.96
6. India Street @ Newbury Street	2	0.65
7. India Street @ Middle Street	5	1.39
8. India Street @ Fore Street	1	0.20
9. Fore Street @ Mountfort Street	1	0.33
10. Mountfort Street @ Congress Street	10	0.63
11. Federal Street @ Mountfort Street	1	1.08
12. Mountfort Street @ Newbury Street	1	1.13
13. Fore Street @ Hancock Street	3	1.21
14. Hancock Street @ Thames Street	1	0.53
15. Middle Street @ Hampshire Street	1	0.62
16. India Street @ Newbury Street	2	0.65
17. Franklin Arterial btw. Commercial Street and Fore Street WB	1	0.48
18. Franklin Arterial btw. Fore Street and Middle Street WB	1	0.43
19. Franklin Arterial btw. Middle Street and Fore Street EB	1	0.43
20. Franklin Arterial btw. Fore Street and Commercial Street EB	2	0.86
21. India Street btw. Congress Street and Federal Street	1	0.31
22. India Street btw. Federal Street and Newbury Street	4	1.85
23. India Street btw. Newbury Street and Middle Street	1	0.43
24. Fore Street btw. India Street and Hancock Street	1	0.36
25. Fore Street btw. Franklin Arterial and India Street	5	1.43
26. Middle Street btw. Franklin Arterial and Hampshire Street	3	1.03
27. Middle Street btw. Hampshire Street and India Street	1	0.92
28. Commercial Street btw. Franklin Arterial and India Street/Thames Street	6	1.28
29. Fore Street btw. Mountfort Street and Hancock Street	4	1.31
30. Mountfort Street btw. Congress Street and Federal Street	3	1.09
31. Mountfort Street btw. Newbury Street and Fore Street	5	4.80
32. Hancock Street btw. Fore Street and Middle Street	1	1.07

The MDOT considers any roadway intersection or segment a high crash location if both of the following criteria are met:

- ***8 or more accidents and,***
- ***A Critical Rate Factor greater than 1.00***

As the data presented in the chart shows, there are no high crash locations within the expanded study area.

SUMMARY

1. The proposed 100 Fore Street office building site is forecast to generate a total of 157 unadjusted trips in the "*morning*" peak hour and an additional 170 unadjusted trips in the "*evening*" peak hour.

2. The actual increase in trips generated by the proposed office site is considerably less with appropriate reductions applied for existing site generated trips, shared trips and other modes of travel. The noted site trip adjustments reduce the actual "new" vehicle trips generated by the site to a total of 81 trips in the morning peak hour and 72 trips in the evening peak hour.

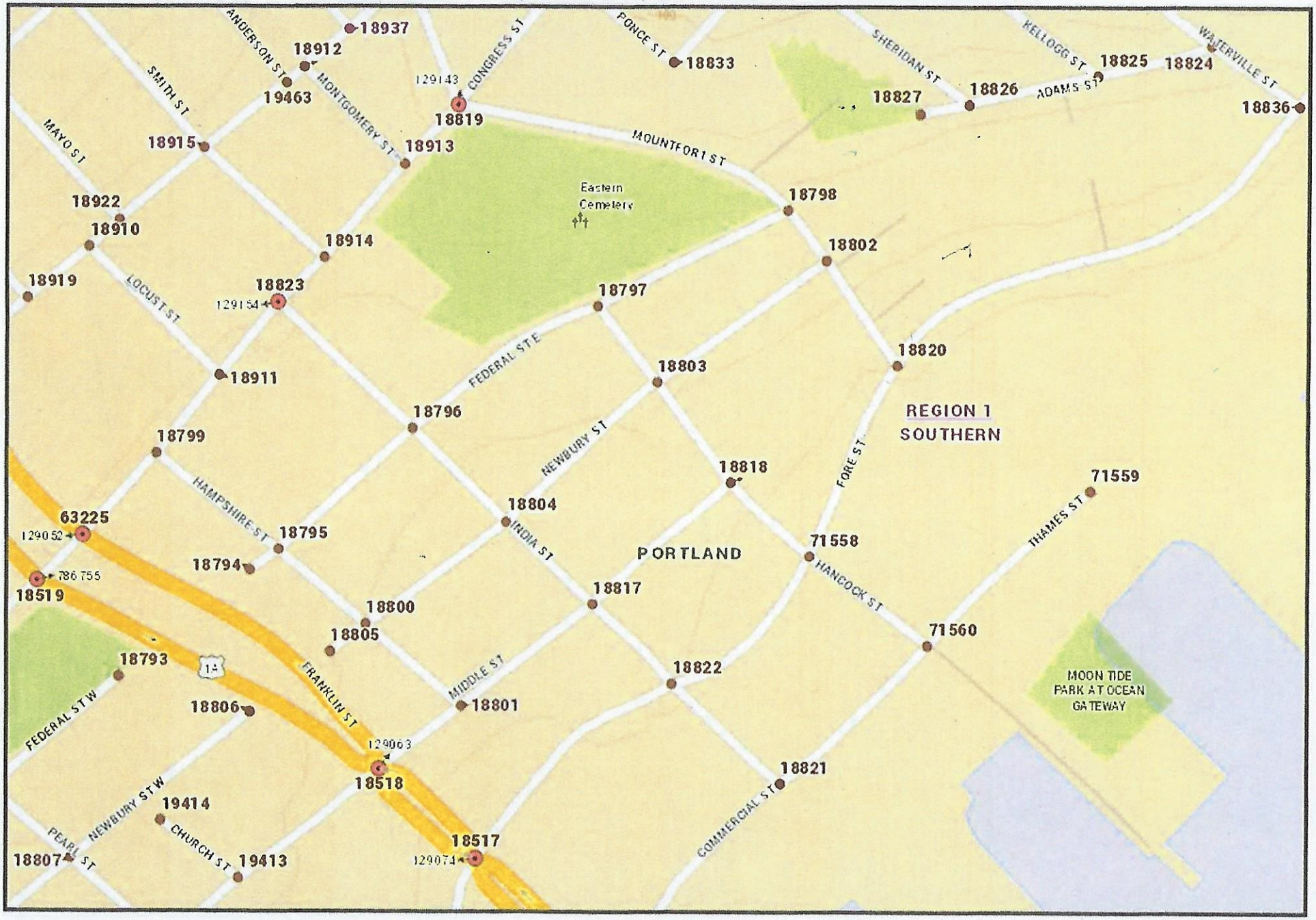
3. The proposed site is forecast to generate less than 100 new vehicle trips during either peak hour time period, accordingly, the proposed project will not be required to file for and obtain a MaineDOT Traffic Movement Permit.

4. MaineDOT's most current roadway safety data (2015 through 2017) for the street system serving the proposed site shows there are no high crash locations in the defined area.

5. A detailed traffic impact study will be completed for the proposed site that evaluates the project's traffic impacts on nearby intersections including, at a minimum, the following locations:
    a. Mountfort Street @ Fore Street
    b. Fore Street @ Hancock Street
    c. Fore Street @ India Street
    d. All proposed site access driveways



DEFAULT TITLE FROM MAP DOCUMENT



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0.1 Miles

1 inch = 0.07 miles

Date: 8/14/2017
Time: 9:16:53 AM

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☐ 1320 Summary

REPORT DESCRIPTION

Franklin St Middle St area in Portland

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

Route: **0001A**	Start Node: **15397**	Start Offset: **0**	☐ Exclude First Node
	End Node: **18518**	End Offset: **0**	☐ Exclude Last Node
Route: **001AS**	Start Node: **18518**	Start Offset: **0**	☑ Exclude First Node
	End Node: **18517**	End Offset: **0**	☑ Exclude Last Node
Route: **001AS**	Start Node: **18517**	Start Offset: **0**	☑ Exclude First Node
	End Node: **15397**	End Offset: **0**	☑ Exclude Last Node
Route: **0561000**	Start Node: **18823**	Start Offset: **0**	☐ Exclude First Node
	End Node: **18821**	End Offset: **0**	☐ Exclude Last Node
Route: **0560286**	Start Node: **18822**	Start Offset: **0**	☑ Exclude First Node
	End Node: **18517**	End Offset: **0**	☑ Exclude Last Node
Route: **0560286**	Start Node: **71558**	Start Offset: **0**	☑ Exclude First Node
	End Node: **18822**	End Offset: **0**	☑ Exclude Last Node
Route: **0560286**	Start Node: **18820**	Start Offset: **0**	☐ Exclude First Node
	End Node: **71558**	End Offset: **0**	☑ Exclude Last Node
Route: **0560505**	Start Node: **18518**	Start Offset: **0**	☑ Exclude First Node
	End Node: **18817**	End Offset: **0**	☑ Exclude Last Node
Route: **0560505**	Start Node: **18817**	Start Offset: **0**	☑ Exclude First Node
	End Node: **18818**	End Offset: **0**	☑ Exclude Last Node
Route: **0560344**	Start Node: **18818**	Start Offset: **0**	☐ Exclude First Node
	End Node: **71560**	End Offset: **0**	☐ Exclude Last Node

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☐ 1320 Summary

REPORT DESCRIPTION

Franklin St Middle St area in Portland

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

Route: **0561001**	Start Node: **15397**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18821**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560524**	Start Node: **18819**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18820**	End Offset: **0**	☑ **Exclude Last Node**

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
15397	0001A - 11.81	Int of COMMERCIAL ST FRANKLIN ST MAINE STATE PIER	9	10	0	1	0	4	5	50.0	4.912	0.68	1.28	0.00
												Statewide Crash Rate:	0.74	
18518	0001A - 11.95	Int of FRANKLIN ST MIDDLE ST	9	20	0	0	1	6	13	35.0	5.305	1.26	1.26	0.00
												Statewide Crash Rate:	0.74	
18517	0001A - 11.89	Int of FORE ST FRANKLIN ST	9	7	0	0	1	2	4	42.9	4.920	0.47	1.28	0.00
												Statewide Crash Rate:	0.74	
18796	0561000 - 0.08	Int of FEDERAL ST E INDIA ST	2	3	0	0	0	1	2	33.3	2.124	0.47	0.49	0.00
												Statewide Crash Rate:	0.16	
18823	0561000 - 0	Int of CONGRESS ST INDIA ST	9	11	0	0	1	3	7	36.4	3.875	0.95	1.35	0.00
												Statewide Crash Rate:	0.74	
18817	0561000 - 0.18	Int of INDIA ST MIDDLE ST	2	5	0	0	1	1	3	40.0	2.569	0.65	0.47	1.39
												Statewide Crash Rate:	0.16	
18804	0561000 - 0.13	Int of INDIA ST NEWBURY ST	2	2	0	0	0	0	2	0.0	2.096	0.32	0.49	0.00
												Statewide Crash Rate:	0.16	
18822	0561000 - 0.23	Int of FORE ST INDIA ST	2	1	0	0	0	1	0	100.0	4.377	0.08	0.41	0.00
												Statewide Crash Rate:	0.16	
18821	0561000 - 0.29	Int of COMMERCIAL ST INDIA ST THAMES ST	2	0	0	0	0	0	0	0.0	2.941	0.00	0.45	0.00
												Statewide Crash Rate:	0.16	
18820	0560286 - 0.28	Int of FORE ST MOUNTFORT ST	2	1	0	0	1	0	0	100.0	2.189	0.15	0.46	0.00
												Statewide Crash Rate:	0.15	
18801	0560505 - 0.33	0509221 POR,MIDDLE,HAMPSHIRE ST	2	1	0	0	0	0	1	0.0	1.004	0.33	0.53	0.00
												Statewide Crash Rate:	0.14	
18818	0560344 - 0.09	Int of HANCOCK ST MIDDLE ST	2	0	0	0	0	0	0	0.0	0.542	0.00	0.59	0.00
												Statewide Crash Rate:	0.14	
71560	0560344 - 0.19	Int of HANCOCK ST THAMES ST	2	1	0	0	0	1	0	100.0	1.236	0.27	0.51	0.00
												Statewide Crash Rate:	0.14	
71558	0560344 - 0.13	Int of FORE ST HANCOCK ST	2	3	0	0	0	1	2	33.3	1.664	0.60	0.50	1.21
												Statewide Crash Rate:	0.15	
18802	0560524 - 0.17	Int of MOUNTFORT ST NEWBURY ST	2	1	0	0	0	0	1	0.0	0.495	0.67	0.59	1.13
												Statewide Crash Rate:	0.14	
18819	0560524 - 0	Int of CONGRESS ST, MOUNTFORT ST, WASHINGTON AV	9	10	0	0	0	0	10	0.0	3.933	0.85	1.34	0.00
												Statewide Crash Rate:	0.74	
18798	0560524 - 0.14	Int of FEDERAL ST E MOUNTFORT ST	2	1	0	0	0	0	1	0.0	0.524	0.64	0.59	1.08
												Statewide Crash Rate:	0.14	
Study Years: 3.00		**NODE TOTALS:**		77	0	1	5	20	51	33.8	44.706	0.57	0.60	0.95

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
15397	18517	3123025	0 - 0.08	0001A - 11.81	0.08	2	1	0	0	0	1	0	100.0	0.00091	366.82	765.02	0.00
Int of COMMERCIAL ST FRANKLIN ST MAINE STATE PIER				US 1A											Statewide Crash Rate: 218.74		
18517	18518	3118954	0 - 0.06	0001A - 11.89	0.06	2	1	0	0	0	0	1	0.0	0.00104	321.32	741.01	0.00
Int of FORE ST FRANKLIN ST				US 1A											Statewide Crash Rate: 218.74		
18517	18518	3118912	0 - 0.06	001AS - 2.08	0.06	2	1	0	0	1	0	0	100.0	0.00103	322.20	741.51	0.00
Int of FORE ST FRANKLIN ST				US 1AS											Statewide Crash Rate: 218.74		
15397	18517	3100256	0 - 0.08	001AS - 2.14	0.08	2	2	0	0	0	0	2	0.0	0.00105	634.20	738.62	0.00
Int of COMMERCIAL ST FRANKLIN ST MAINE STATE PIER				US 1AS											Statewide Crash Rate: 218.74		
18796	18823	3106811	0 - 0.08	0561000 - 0	0.08	2	1	0	0	0	0	1	0.0	0.00159	209.04	665.06	0.00
Int of FEDERAL ST E INDIA ST				RD INV 05 61000											Statewide Crash Rate: 218.74		
18796	18804	3130049	0 - 0.05	0561000 - 0.08	0.05	2	4	0	0	0	0	4	0.0	0.00095	1402.83	756.87	1.85
Int of FEDERAL ST E INDIA ST				RD INV 05 61000											Statewide Crash Rate: 218.74		
18804	18817	3122291	0 - 0.05	0561000 - 0.13	0.05	2	1	0	0	0	0	1	0.0	0.00104	319.15	739.79	0.00
Int of INDIA ST NEWBURY ST				RD INV 05 61000											Statewide Crash Rate: 218.74		
18817	18822	3106813	0 - 0.05	0561000 - 0.18	0.05	2	0	0	0	0	0	0	0.0	0.00111	0.00	728.90	0.00
Int of INDIA ST MIDDLE ST				RD INV 05 61000											Statewide Crash Rate: 218.74		
18821	18822	3106816	0 - 0.06	0561000 - 0.23	0.06	2	0	0	0	0	0	0	0.0	0.00142	0.00	685.41	0.00
Int of COMMERCIAL ST INDIA ST THAMES ST				RD INV 05 61000											Statewide Crash Rate: 218.74		
18517	18822	3106667	0 - 0.11	0560286 - 0.45	0.11	2	5	0	0	0	0	5	0.0	0.00227	732.76	514.00	1.43
Int of FORE ST FRANKLIN ST				RD INV 05 60286											Statewide Crash Rate: 174.88		
71558	18822	4047689	0 - 0.08	0560286 - 0.37	0.08	2	1	0	0	0	0	1	0.0	0.00168	197.98	555.21	0.00
Int of FORE ST HANCOCK ST				RD INV 05 60286											Statewide Crash Rate: 174.88		
18820	71558	4047688	0 - 0.09	0560286 - 0.28	0.09	2	4	0	0	0	0	4	0.0	0.00189	703.93	538.80	1.31
Int of FORE ST MOUNTFORT ST				RD INV 05 60286											Statewide Crash Rate: 174.88		
18518	18801	194025	0 - 0.06	0560505 - 0.27	0.06	2	3	0	0	0	2	1	66.7	0.00076	1312.51	1276.78	1.03
Int of FRANKLIN ST MIDDLE ST				RD INV 05 60505											Statewide Crash Rate: 407.65		
18801	18817	194399	0 - 0.06	0560505 - 0.33	0.06	2	1	0	0	0	0	1	0.0	0.00022	1548.39	1680.04	0.00
0509221 POR,MIDDLE,HAMPSHIRE ST				RD INV 05 60505											Statewide Crash Rate: 407.65		
18817	18818	194423	0 - 0.08	0560505 - 0.39	0.08	2	0	0	0	0	0	0	0.0	0.00038	0.00	1512.63	0.00
Int of INDIA ST MIDDLE ST				RD INV 05 60505											Statewide Crash Rate: 407.65		
71558	18818	4047715	0 - 0.04	0560344 - 0.09	0.04	2	1	0	0	0	0	1	0.0	0.00018	1847.17	1719.40	1.07
Int of FORE ST HANCOCK ST				RD INV 05 60344											Statewide Crash Rate: 407.65		
71560	71558	4047714	0 - 0.06	0560344 - 0.13	0.06	2	0	0	0	0	0	0	0.0	0.00046	0.00	1442.59	0.00
Int of HANCOCK ST THAMES ST				RD INV 05 60344											Statewide Crash Rate: 407.65		
15397	18821	3106035	0 - 0.11	0561001 - 0	0.11	2	6	0	0	0	0	5	0.0	0.00268	745.48	581.29	1.28
Int of COMMERCIAL ST FRANKLIN ST MAINE STATE PIER				RD INV 05 61001											Statewide Crash Rate: 218.74		
18798	18819	194394	0 - 0.14	0560524 - 0	0.14	2	3	0	0	0	0	3	0.0	0.00071	1417.05	1301.85	1.09
Int of FEDERAL ST E MOUNTFORT ST				RD INV 05 60524											Statewide Crash Rate: 407.65		

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
18798	18802	194393	0 - 0.03	0560524 - 0.14	0.03	2	0	0	0	0	0	0	0.0	0.00015	0.00	1748.98	0.00
Int of FEDERAL ST E	MOUNTFORT ST			RD INV 05 60524											Statewide Crash Rate: 407.65		
18802	18820	194401	0 - 0.05	0560524 - 0.17	0.05	2	5	0	0	0	0	3	0.0	0.00021	8124.93	1691.75	4.80
Int of MOUNTFORT ST	NEWBURY ST			RD INV 05 60524											Statewide Crash Rate: 407.65		
Study Years: 3.00				**Section Totals:**	1.48		40	0	0	1	3	33	10.0	0.02174	613.28	379.97	1.61
				Grand Totals:	1.48		117	0	1	6	23	84	25.6	0.02174	1793.84	521.86	3.44

ENVIRONMENTAL AND STORMWATER

The following statements are provided in accordance with the submission checklist and Section 14-526 of the ordinance.

(b) Environmental Quality Standards

Water Quality, Stormwater Management and Erosion Control (14-526 (b) 3 a)

- *Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable*
- *Erosion control plan and measures*
- *Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable*
- *Subsurface sanitary sewage disposal and groundwater protection*

3. Water Quality, Stormwater Management and Erosion Control:

a. Stormwater:

(i) The site currently contains a very limited drainage system consisting of several shallow catch basin inlets. The structures have not been maintained and are partially plugged and their outlets not exposed for examination, so it is uncertain where the structures might drain, although it is likely they connect to the existing sewer in Fore Street. The majority of the site consists of sheet flow conditions that results in runoff shedding towards the property edges and towards the southeast corner of the lot, where sheeting runoff appears to simply flow onto the City's gravel parking lot. Runoff from a portion of the existing building roofs appears to sheet onto the adjacent City property along the southerly property boundary. The proposed project will result in an insignificant impact to the site's drainage regime since the pre and post impervious areas will be relatively unchanged. The current proposal includes new roof drainage systems that will connect to the Fore Street sewer. The roof drainage will be separated from the domestic plumbing all the way out to the street thus allowing future connections to be possible if/when the sewer in the street is separated. It may also be possible to connect the new building roof drainage to a proposed large diameter (60") separated drainage system that is currently contemplated to run from Fore Street along the site's easterly side, southerly to an outfall into the river, as depicted on design plans prepared by Woodard & Curran, on behalf of the City.

(ii) Not applicable

(iii) Not applicable

(iv) The site's drainage conditions will remain basically unchanged as the site is nearly all developed under current conditions. The development team will continue to review and coordinate connection to a proposed City

separated drainage line to extend from Fore Street down the easterly side of the site to the Fore River outfall.

b. *Flooding Standards:*

The project will ultimately meet the General Standards under Chapter 500, Stormwater Law (City of Portland Technical Manual, Section 5 – Portland Stormwater Management and MaineDEP Ch. 500, 3 (e)). The Basic Standards will apply to this project and a detailed Soil Erosion and Sediment Control Plan has been developed to address this. One or more roof drain water quality units will be installed to treat runoff from the building roof and there will be an overall increase of pervious area including landscaping to aid with improving water quality, since the site is now nearly 100% covered with pavement or steeply sloped ground.

c. Not applicable.

d. Not applicable.

e. Construction at the site will be required to follow Local, State and Federal regulations and will be undertaken under the supervision of a suitably qualified environmental professional. Post-construction activities at the site do not pose a risk of groundwater contamination.

f. The project will be connected to the public sanitary sewer system which is adequately sized for the anticipated project flows. Provisions to connect the building roof drainage into a future separated drainage system within the easterly driveway with a routing and discharge to the Fore River remains under review and discussion with City officials.

PUBLIC INFRASTRUCTURE AND SAFETY

The following statements are provided in accordance with the submission and Section 14-526 of the ordinance.

(c) Public Infrastructure and Community Safety Standards.

Consistency with City Master Plans (14-526 (c) 1)

- *Identify consistency with master plans*
- *Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable*

1. *Consistency with City Master Plans:*

   a. The project has been designed to be consistent with the City's Zoning Ordinance and off-site infrastructure plans.

   b. Sanitary sewer flows from the development will go to the Portland WWTP.

Public Safety and Fire Prevention (14-526 (c) 2)

- *Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3)*
- *Emergency vehicle access*
- *Address consistency with public safety standards (Technical Manual, Section 3)*
- *Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist*

2. *Public Safety and Fire Prevention:*

   a. The site has been designed to promote a safe and welcoming office environment.

   b. The site provides access from Fore Street for emergency vehicles.

   c. Fire hydrants are located adjacent to the property along the existing streets. The building will be fully sprinklered. A summary letter to Division Chief Thompson is included at the end of this section.

Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9)

- *Electrical services, including providing underground services*
- *Identify existing and proposed connections for public utilities and required public utility upgrades*
- *Sewer line connections are required, if there is a main within 200 feet*
- *Proposed solid waste management facilities on-site and management for the site*
- *Written evidence of the ability to serve from utility companies, as applicable*

a. The Applicant is securing letters from the applicable utilities stating their ability to serve the site. The project will require new or updated electrical, gas, sewer, and water services to the site.

b. All new electrical services to the site will be underground.

c. All new utility infrastructures from the existing overhead lines will meet the provisions of the Technical Manual.

d. The project will utilize a new service connection to the public sewer system within Fore Street.

e. All new sewer and stormwater infrastructure will meet City standards. Backflow prevention and an oil water separator for the garage deck drainages will be provided.

f. A solid waste collection and storage area will be provided with adequate capacity for the needs of the development. The owner will contract with a waste removal vendor as part of the onsite management of waste collection and recycling.

Attached are ability to serve letters from Unitil and Spectrum. We are continuing to work on coordination with the PWD and CMP and will forward these letters to the planning office upon receipt.

Unitil
natural gas

September 25, 2018

Stephen Bushey, P.E. Associate
Stantec Consulting Services, Inc.
482 Payne Rd.
Scarborough, ME 04074

Re: 100 Fore St., Portland, Maine

Dear Stephen,

Thank you for your interest in using natural gas for the above referenced project.

Unitil has 6 inch steel natural gas main on Fore St. and can serve the proposed office building and parking garage with natural gas; expected load of 3,000 CFH is what was estimated by Chris Jordan of Johnson and Jordan and is the load that we evaluated.

As the project progresses, please send me the breakdown of natural gas equipment so that the information can be added to our records. If you have any further questions or require additional information, please contact me directly at (207) 541-2543 or at carpenters@unitil.com.

Sincerely,

Scott Carpenter

Scott Carpenter
Senior Business Development Representative
Unitil Corporation
(o) 207-541-2543 (f) 207-541-2593

From: Pelletier, Mark
To: Daniell, Celina
Subject: RE: 100 Fore Street - Portland ABS Request
Date: Thursday, September 27, 2018 1:30:42 PM

Celina,

Spectrum Cable has both Coax and fiber on the existing pole lines on Fore St and Mountfort Rd surrounding your project.
Spectrum Cable, We will require one 4 inch conduit swept up above final grade and against the riser pole and swept up above finished floor in elec room. 1/4in pull rope in place.

Any costs if any would be discussed with the company requesting our services, Whether coax or fiber. Any reworking or upgrade needed(if Any) will be done when a have a request of by a tenant.

Spectrum Cable can provide services to this project when services are requested.

Mark

From: Daniell, Celina [mailto:Celina.Daniell@stantec.com]
Sent: Monday, September 24, 2018 2:03 PM
To: Pelletier, Mark <Mark.Pelletier@charter.com>
Cc: Bushey, Stephen <Stephen.Bushey@stantec.com>
Subject: 100 Fore Street - Portland ABS Request

Attached please find an Ability to Serve request for the above referenced project.

If you have any questions with regards to the information submitted, please contact our office.

Thank you,

Celina Daniell
Senior Technical Assistant

Direct: 207 887-3469
Fax: 207 879-0896
Celina.Daniell@stantec.com

Stantec
482 Payne Road Scarborough Court
Scarborough ME 04074-8929 US

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Stantec Consulting Services Inc.
482 Payne Road Scarborough Court, Scarborough ME 04074-8929

September 24, 2018

Mr. Brad Roland, PE
City of Portland Public Works
55 Portland Street
Portland, Maine 04104-3553

Subject: Proposed Land Development
100 Fore Street, Portland, Maine
Request for Ability to Serve Letter

Dear Brad:

Our office is working as a consultant in the site planning and permitting associated with the proposed development of land at 100 Fore Street in Portland, Maine. The project site is located within a portion of property identified on Tax Map 19/Block A/Lot 10 according to the City of Portland Tax Assessor's Maps. We would like to verify the City's wastewater division has ability to provide wastewater capacity for the project and to determine any impact fees.

The project will consist of construction of a new multi-level parking garage and additional office space, with size and use summarized as follows:

Space	Use (SF)
Parking Garage	600 spaces
Office Use (770 Employees)	77,000 SF
Ground Level Retail Space (10 employees)	4,000 SF

We note a portion of the existing building will be demolished to make way for the garage and office building. A portion of the existing building area that contains the Hamilton Marine retail space will be partially demolished and the remaining interior renovated for the development of a private gymnasium space. We expect that the existing sanitary sewer service connection will remain in place to serve this renovated building space.

The projected water use for the new building using the Maine State Plumbing Code and typical City of Portland flow information is as follows:

Building – Parking Garage/Office	Design Flow (GPD)
Parking Garage 600 spaces @ 1 gpd/space	600
Office – 770 Employees @ 12 gpd/employee	9,240
Retail Space – 10 Employees @ 12 gpd/employee	120
Total Parking Garage/Office/Retail	**9,960**

Based on this amount of flow, we trust that the existing sanitary sewer system in Fore Street has adequate capacity to serve this project. We understand that the City has long range plans for the separation of the combined system within Fore Street. This may involve the installation of a large storm drain pipe that will extend from Fore Street down the easterly side of the 100 Fore property to the Thames Street Extension and ultimately to a new outfall within the Amethyst Site. This separation project would ultimately free up capacity in the existing Fore Street sewer system.

If you have any questions regarding this request, please do not hesitate to our office.

Sincerely,

STANTEC CONSULTING SERVICES INC.
Stephen Bushey, PE
Associate, Senior Project Manager
Phone: (207) 887-3478
Fax: 207-883-3376
Stephen.Bushey@stantec.com

Attachment: Wastewater Application

v:\2108\active\210801622\civil\admin\working_documents\utility letters\abs_portland_roland_20180924.docx

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Portland Dept. of Public Works -
Water Resources
55 Portland Street,
Portland, Maine 04101-2991

Bradley Roland, P.E.
Water Resources Division
Department of Public Works
55 Portland Street
Portland, ME 04103

Date: 09/24/2018

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: 100 Fore Street

Chart Block Lot Number: Map 19/Block A/Lot 10

Proposed Use: Parking Garage / Office
Previous Use: Office/Retail
Existing Sanitary Flows: * GPD
Existing Process Flows: 0 GPD
Description and location of City sewer that is to receive the proposed building sewer lateral.
36" combined sewer interceptor in Fore Street
*Have requested records from PWD

Site Category		
	Commercial *(see part 4 below)*	X
	Industrial *(complete part 5 below)*	
	Governmental	
	Residential	
	Other *(specify)*	

Clearly, indicate the proposed connections, on the submitted plans.

2. Please, Submit Contact Information.

City Planner's Name: Christine Grimando Phone:
Owner/Developer Name: Jonathan Cohen - 100 Fore Street LLC
Owner/Developer Address: P.O. Box 910, Westbrook, ME 04098-0910
Phone: 207.776.0304 Fax: E-mail: jcohen@a-d-w.bix
Engineering Consultant Name: Stephen R. Bushey, PE - Stantec
Engineering Consultant Address: 482 Payne Road - Scarborough, ME 04074
Phone: 207.887.3478 Fax: 207.883.3376 E-mail: stephen.bushey@stantec.com

Note: Consultants and Developers should allow +/- 15 days, for capacity status, prior to Planning Board Review.

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 450 employees x 12 gpd/employee = 5,400 GPD
Peaking Factor/ Peak Times:
Specify the source of design guidelines: *(i.e. "Handbook of Subsurface Wastewater Disposal in Maine," "Plumbers and Pipe Fitters Calculation Manual," Portland Water District Records, Other (specify)*

Note: Please submit calculations showing the derivation of your design flows, either on the following page, in the space provided, or attached, as a separate sheet.

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values: N/A

Size of External Grease Interceptor: _____

Retention Time: _____

Peaking Factor/ Peak Times: _____

Note: In determining your restaurant process water flows, and the size of your external grease interceptor, please use The Uniform Plumbing Code. Note: In determining the retention time, sixty (60) minutes is the minimum retention time. Note: Please submit detailed calculations showing the derivation of your restaurant process water design flows, and please submit detailed calculations showing the derivation of the size of your external grease interceptor, either in the space provided below, or attached, as a separate sheet.

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: N/A GPD

Do you currently hold Federal or State discharge permits? Yes ____ No ____

Is the process wastewater termed categorical under CFR 40? Yes ____ No ____

OSHA Standard Industrial Code (SIC): *(http://www.osha.gov/oshstats/sicser.html)*

Peaking Factor/Peak Process Times: _____

Note: On the submitted plans, please show where the building's domestic sanitary sewer laterals, as well as the building's industrial-commercial process wastewater sewer laterals exits the facility. Also, show where these building sewer laterals enter the city's sewer. Finally, show the location of the wet wells, control manholes, or other access points; and, the locations of filters, strainers, or grease traps.

Note: Please submit detailed calculations showing the derivation of your design flows, either in the space provided, or attached, as a separate sheet.

Stantec Consulting Services Inc.
482 Payne Road, Scarborough Court, Scarborough, ME 04074

October 10, 2018

Division Chief Robert Thompson
City of Portland Fire Department
380 Congress Street
Portland, Maine 04101

Subject: 100 Fore Street
Fire Safety Checklist

Dear Chief Thompson:

In accordance with instructions in the City's Level III Site Plan and Subdivision Review packet, please find enclosed the drawings necessary for your review of the proposed multi-level parking garage and commercial office building on 100 Fore. As part of the building design, the architect will retain a third-party Fire Protection Engineer to review NFPA 101. We have listed each item in your checklist below, followed by our response.

1. *Name, address, telephone number of applicant.*

   100 Fore Street, LLC
   Attn: Jonathan Cohen
   PO Box 910
   Westbrook, ME 04092

2. *Name, address, telephone number of architect/contractor.*

   Archetype
   48 Union Wharf
   Portland, ME 04101
   207.772.6022
   Attn: Bill Hopkins

   Johnson & Jordan
   18 Mussey Road
   Scarborough, ME 04074
   207.883.8345
   Attn: Chris Jordan

3. *Proposed uses of any structures (NFPA and IBC classification).*

Building	IBC Code	NFPA Code	Sprinkler
Office Building/Assembly Construction Type II-A (protected, noncombustible)	S-2, B	2009	Yes NFPA13

*Systems designed to meet NFPA

4. *Square footage of all structures (total and per story).*

Building	Footprint Area (SF)
First Floor (ground) – Parking	64,424
Second Floor – Parking	64,235
Third Floor – Parking	64,877
Fourth Floor – Office	42,900
Fifth Floor – Office	39,500
Total	275,936

5. *Elevation of all structures.*

   Architectural building elevations accompany this letter and they show the various locations of door openings, etc. around the building perimeter.

6. *Proposed fire protection of all structures.*

   The proposed building will have a sprinkler system with additional protection per code. Fire flows and requirements for system storage or booster pumping are subject to the fire system design which will be performed prior to the request for a building permit.

7. *Hydrant locations.*

   Multiple fire hydrants are currently located on Fore Street opposite the project site less than 100 feet from the building.

8. *Water main(s) size and location.*

   The site will be served by a 6" sprinkler service to be extended into the building off an existing 12" water main along either Fore Street or a new main line water pipe that will extend from Fore Street to Thames Street Extension. A 4" domestic service will also be extended to the building. The building is expected to have internal sprinkler risers and a Siamese fire pump connection on the Fore Street side of the building.

9. *Access to all structures (min. 2 sides).*

   The accompanying site plan depicts the site's access conditions that include access to two or more sides of the buildings.

10. *A code summary shall be included referencing NFPA 1 and all fire department technical standards.*

NFPA 1 – Chapter 18 Fire Department Access and Water Supply

18.2 Fire Department Access:

The project site is located in a densely-developed area and is fronted by public streets. The following street widths are currently available:

Street	Width
Fore Street	38'

Per NFPA 1 – Chapter 18.2.3.2.2.1, all first story floors shall be located not more than 450 ft. from a Fire Department access road.

City of Portland Technical Manual – Section 3 Public Safety

3.4.1 Every dead-end roadway more than one hundred fifty (150') feet in length shall provide a turnaround at the closed end. Turnarounds shall be designed to facilitate future street connectivity and shall always be designed to the right (refer to Figure I-5).

Supporting Evidence: Not applicable.

3.4.2 Where possible, developments shall provide access for Fire Department vehicles to at least two sides of all structures. Access may be from streets, access roads, emergency access lanes, or parking areas.

Supporting Evidence: As depicted on the Site Plan, the proposed building layout provides for a minimum two-sided access to the structure.

3.4.3 Building setbacks, where required by zoning, shall be adequate to allow for emergency vehicle access and related emergency response activities and shall be evaluated based on the following factors:

- *Building Height.*
- *Building Occupancy.*
- *Construction Type.*
- *Impediments to the Structures.*
- *Safety Features Provided.*

Supporting Evidence: The proposed development layout has contemplated emergency access conditions and provides for safe and efficient access along the public and private streets for emergency vehicles.

3.4.4. Fire Dept. access roads shall extend to within 50' of an exterior door providing access to the interior of the structure.

Supporting Evidence: The building will be provided with exterior doors that will be within 50' of a Fire Department access route, namely Fore Street and the easterly driveway connecting Fore Street to Thames Street Extension.

3.4.5. Site access shall provide a minimum of nine (9) feet clearance height to accommodate ambulance access.

Supporting Evidence: A minimum of 9 feet vertical clearance will be provided below any overhead signage or utilities entering the site.

3.4.6. Elevators shall be sized to accommodate an 80 x 24-inch stretcher.

Supporting Evidence: The proposed elevator will be designed to satisfy this requirement.

3.4.7. All structures are required to display the assigned street number. Numbers shall be clearly visible from the public right of way.

Supporting Evidence: Currently, the project location is 100 Fore Street. The applicant will work with the City's Public Services Division to confirm that this will remain the street address to meet City standards.

If you need any further information regarding this review, please contact our office.

Regards,

STANTEC CONSULTING SERVICES INC.

Stephen R. Bushey, P.E.
Associate
Tel: 207-887-3478
Stephen.bushey@stantec.com

Attachments

c: Planning Authority

V:\2108\active\210801622\civil\admin\permitting\local\Site Plan\ltr_thompson_fire_20181010.docx

SITE DESIGN

The following statements are provided in accordance with the submission and Section 14-526 of the ordinance.

(d) Site Design Standards.

Massing, Ventilations and Wind Impact (14-526 (d) 1)

- *Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable.*
- *Bulk, location or height impacts on adjoining structures*
- *Identify and locate HVAC equipment and venting away from public spaces and residential properties*
- *Identify screening and manufacturing specifications for noise, if applicable*

1. *Massing, Ventilation and Wind Impact:*

   a. The project proposes construction of a new multi-story building. The project will not result in any significant changes to the wind environment proximate to the site.

   b. The project will not result in any significant impacts to abutting properties and is consistent with the Eastern Waterfront Master Plan and other zoning considerations.

   c. HVAC venting, if necessary, will be directed through building roof top mounted units and will not impact any adjacent public spaces.

Shadows (14-526 (d) 2), if applicable

- Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)

2. *Shadows:*

   a. The proposed building at the site will not cast significant shadows onto neighboring properties, or block access to direct sunlight for structures utilizing solar energy. The Site Layout Plan and Grading and Drainage Plan show the proposed site improvements and their relationships to property lines. The grading plan shows the relative elevations of the building with respect to elevations along the property lines.

Snow and Ice Loading (14-526 (d) 3)

- *Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways.*

3. *Snow and Ice Loading:*

   a. The proposed building has been designed and located such that accumulated snow and ice will not fall onto adjacent properties or public ways. Snow will be

removed from the upper level parking deck and will require contracted services to remove from the property, when required.

View Corridors (14-526 (d) 4), if applicable

- *Protection of designated view corridors (Portland Design Manual, Appendix 1)*

4. *View Corridors:*
   a. The project entails construction of a multi-story building at the site in manner that is compliant with the Downtown Vision View Corridor protection plan, the B6 Urban Commercial Business Zone, and Eastern Waterfront Mixed Zone plans and objectives. Specific site measures to preserve the Mountfort Street corridor through to Thames Street has been made. In addition, the easterly driveway maintained an access and view corridor from Fore Street to Thames Street.

Historic Resources (14-526 (d) 5), if applicable

- *Identify developments within Historic Districts or affecting Designated Landmarks*
- *Certificate of Appropriateness or other evidence*
- *Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required*
- *Address preservation and documentation of Archaeological Resources*

5. *Historic Resources:*
   a. The development is not located in a historic district, historic landscape district or City designated landmark.
   b. The development is not located adjacent to or within 100 feet of a designated landmark, historic district, or historic landscape district.
   c. There are no known archaeological resources on the site

Exterior Lighting (14-526 (d) 6)

- *Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12)*
- *Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)*

6. *Exterior Lighting:*
   a. Site Lighting
      (i) All new exterior lighting at the site will be full cutoff with no light emitted above the horizontal plane, and in accordance with Section 12 of the Technical Manual. A photometric Lighting Plan has been developed by Swaney Lighting demonstrating illumination levels throughout the site consistent with City Standards and is included with submission package.

   b. Architectural and Specialty Lighting
      (i) Not applicable to the project.

c. Street Lighting

(i) There are existing street lights along Fore Street. The accompanying lighting materials include the installation of new City standard street lights along Fore Street.

Noise and Vibration (14-526 (d) 7)

- *Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements*

7. Noise and Vibration:

Project noise levels will be designed to meet the permitted standards within the zone. HVAC units will be located on the ground adjacent the building or on the roof top. Equipment cut sheets can be provided upon request.

Signage and Wayfinding (14-526 (d) 8), if applicable

- *Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff*
- *Proposed commercial and directional signage on site*

8. Signage and Wayfinding:

a. All street and wayfinding signage shall meet the requirements of the Manual on Uniform Traffic Devices (MUTCD) and Division 22 of the City Code.

(i) The project is not located in a historic district or subject to Article IX.

(ii) Proposed commercial signage is still being designed and subject to a condition of approval.

(iii) All street and wayfinding signage shall meet the requirements of the Manual on Uniform Traffic Devices (MUTCD) and Division 22 of the City Code.

Zone Related Design Standards (14-526 (d) 9)

- Address Historic Preservation Design Review, if applicable
- Address any applicable design review standards by zone
- Address submission requirements from Design Manual, page 1, addressing neighborhood context
- Description of exterior materials, color, finish, and samples

9. Zoning Related Design Standards:

Information provided by Archetype, PA:

"The project proposed for 100 Fore Street includes 5 levels of use – 3 levels of parking, including parking on grade, as well as 2 levels of office space. Once

above grade, the shape of the building is defined by existing parameters set up by the city in the B-6 height overlay zone and proposed roads. The perimeter is defined by Fore Street, the property line, Mountfort Extension and the proposed connector road between Fore Street and Thames Street Extension. The height of the building is defined by the recently amended zoning in the B-6 height overlay zone.

Once these parameters are applied, the shape is carved out from the allowable mass. The parking levels above grade maximize the buildable area allowed within this perimeter and the design benefits from the existing site condition of the 14'-16' grade change. This allows the larger portion of the mass to be buried into the slope as it relates to Fore Street so that only one level of parking is at an elevation similar to that of Fore Street. Where the parking meets Fore Street, it will be framed on either corner with retail. Between the retail and at the northwest corner is more formal landscaping. It should be noted the space between the two retail spaces is of sufficient depth to be filled in with more retail at a future date.

Once above the top parking level, the building use transitions to office. At this point the mass no longer maximizes the allowable footprint, it now is carved out to create wings of approximately 125' width which is appropriate for the use. On top of the stepping created by this use limitation, there has been a setback put in place for how the building relates to Fore Street in terms of height. The mass is not to exceed 35' in height above the adjacent Fore Street elevation within 40' of the Fore Street right-of-way. This keeps the building sensitive to its surrounding neighbors and how it relates in scale to the streetscape.

Now that the building mass and uses have been determined, we can understand approximately what the size of the 3 uses will be. The three levels of parking allow the project +/-560 parking spaces. This is a very beneficial use to the surrounding neighborhood. Parking in the area is currently maxed out and most of the available

spaces are located in surface level lots. Being that the area is in close proximity to the waterfront and situated between the old port and the east end residential and commercial zone, it is a prime area for new development and park systems and is greatly underutilized as surface level parking. By stacking and concealing our spaces our project helps to alleviate the need for parking in the area in a way that is consistent with the desires of the B-6 zone, the Eastern Waterfront Master Plan and Portland's Comprehensive Plan.

The two office levels proposed create approximately 80,000 S.F. of rentable space. This use reflects changes that have been occurring in this area of Portland recently. As mentioned previously, our location is in a prime location for development being one block from the waterfront and in between the Old Port and the East End. Portland is a prospering city and the peninsula has strong commercial and residential districts but room for growth in the office realm is limited within the historic district whereas this waterfront zone that includes the new hotels and WEX allows for office use to expand along with the rest of the city and take advantage of sites that were not the best and highest use for the area such as the surface level lots and single story industrial buildings.

Finally, the retail space offers 3000-4000 S.F. of space that allow the project to interact more with the public domain. Fore Street is a main connection between

the residential and commercial districts on the peninsula and the distance between them means it is a prime route not only for vehicular traffic but also for foot and bike traffic. This makes it an ideal spot for some smaller retail spaces that act as an extension from the Old Port and easy access from residences.

The three uses together create a project that is mixed-use which is the most desirable use for the area. The project balances the need for good architectural planning with financial viability and produces a project that helps alleviate parking problems in the neighborhood while producing much needed tax revenue and jobs and blending into the city at the pedestrian scale."

Architectural renderings are included with this section.

ENDURA SERIES

WALL/BUILDING MOUNT

Cat.#	
Job	Type

BEACON design . performance . technology

Approvals

SPECIFICATIONS

Intended Use:
The Endura is a ceiling surface mounted or pendant mounted parking structure luminaire with a field replaceable LED light-engine & optical bezel system. Internal components are totally enclosed in a rain-tight and corrosion-resistant die cast aluminum housing. The Endura Luminaire is CSA certified and suitable for damp locations (wet location available on request).

Construction:
- Die cast aluminum two-piece housing
- Shape of the top housing is designed as a bird nesting deterrent
- Die cast main (thermal) housing provides direct-heat exchange between the LED light engine and the cool outdoor air
- Main housing is designed with heat dissipating fins for LED thermal management without the use of metallic screens, cages, or fans
- Main and top housings are designed to hinge open for easy mounting and easy access

LED/Optics:
- Endura luminaire is supplied with an optical one piece cartridge system consisting of an LED engine, LED lamps, optics, gasket and stainless steel bezel
- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one piece optical system
- Two-piece silicone and polycarbonate foam gasket ensures a weather-proof seal around each individual LED
- Endura comes standard with 70 CRI
- Cartridge assembly is available in various lighting distributions using TIR designed acrylic optical lenses over each LED

Electrical:
- 120V through 277V, 50 Hz to 60 Hz
- Dimming drivers are standard, but must contact factory to request wiring leads for purpose of external dimming controls
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600 VAC at 50°C or higher
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only
- Surge protection - 20kA

Controls/Options:
- Endura is available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the Motion Response system reduces the wattage down to a factory preset level, reducing light level accordingly. When motion is detected, the luminaire returns to full wattage and full light output. Please contact Beacon Products if project requirements vary from the standard configurations
- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night. see Energeni product page for more details www.beaconproducts.com/products/energeni
- In addition, Endura can be specified with **SiteSync™** wireless control system for reduction in energy and maintenance cost while optimizing light quality 24/7. See ordering information or visit for more details: www.hubbell-automation.com/products/sitesync/

Installation:
- Top housing is designed with various bolt patterns for mounting to a recessed, surface or rigid-pendant hung ceiling junction box and rigid stem (provided by others)
- After mounting the top housing to the junction box, the main housing is designed to hang and hinge closed after connecting the male and female quick connectors
- Mounting design permits a simple retrofit to existing parking structure luminaires that utilize surface mount or recessed junction boxes

Finish
- IFS polyester powder-coat electro-statically applied and thermocured.
- IFS finish consists of a five stage iron phosphate chemical pretreatment regimen with a polymer primer sealer, ovendry off, and top coated with a thermoset super TGIC polyester powder coat finish
- The finish meets the AAMA 2604 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds

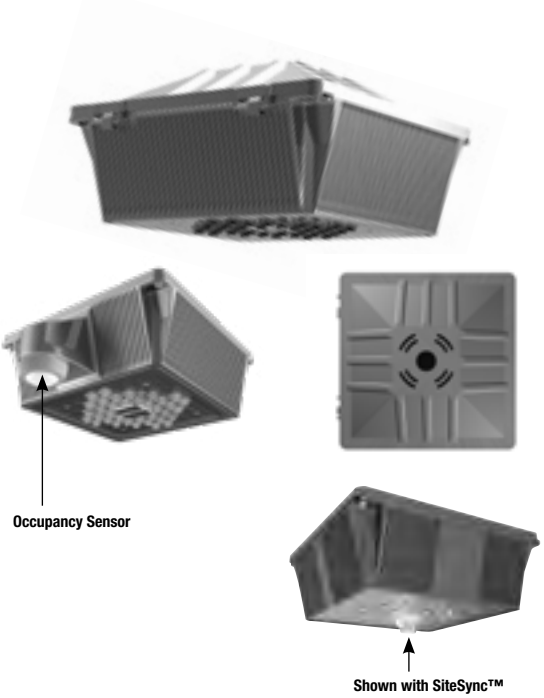
Listings:
- The luminaire shall bear a CSA label and be marked suitable for damp locations (standard). Luminaire may be specified for wet locations.
- This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate Turtle Friendly spec available at: http://www.beaconproducts.com/products/endura

Warranty:
Five year limited warranty for more information visit: www.hubbelllighting.com/resources/warranty

CERTIFICATIONS/LISTINGS

C SP US

PRODUCT IMAGE(S)



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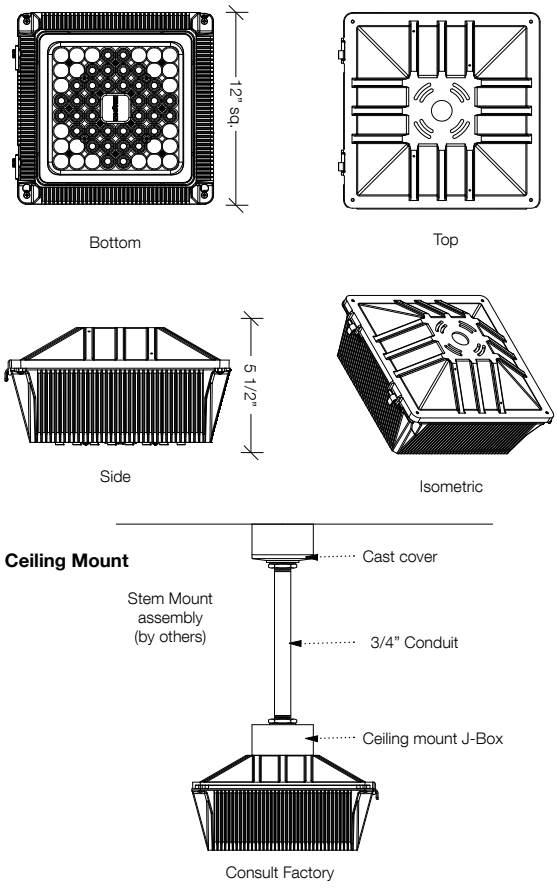

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HUBBELL Lighting

ORDERING INFORMATION ORDERING EXAMPLE: EDR/36L-80/5K7/5W/UNV/GENI-02/BL

SERIES		ENGINE-WATTS		CCT/CRI[11]	
EDR	Endura	24L-27	27 Watts - LED array	3K7	3000K, 70 CRI
		24L-55	55 Watts - LED array	4K7	4000K, 70 CRI
		36L-80	80 Watts - LED array	5K7	5000K , 70 CRI (std.)
		48L-110	110 Watts - LED array		

OPTICS	
5R	Type V, rectangular
5W	Type V, wide
5QM	Type V, square medium
5QN	Type V, square narrow
5QW	Type V, square wide

HIGHER MOUNTING APPLICATIONS	
2X2	Type V Concentrated Spot
4X4	Type V Concentrated Narrow
5X5	Type V Concentrated Medium
5X3	Type V Concentrated Rectangular

VOLTAGE	
UNV	120-277V
120	120V
208	208V
240	240V
277	277V
347	347V
480	480V

ELECTRICAL OPTIONS	
PEC-120	photocell, button 120V
PEC-208	photocell, button 208V
PEC-240	photocell, button 240V
PEC-277	photocell, button 277V
2PF[1,2,8]	Dual power feed
BPC[4,8]	Cold weather battery pack
BP[4,8]	0° C battery pack

CONTROL OPTIONS	
GENI-XX[5,9]	Energeni
SWP[6,9]	SiteSync Wireless Pre-Commission
SWPM[6,7,9]	SiteSync Wireless Pre-Commission w/ Motion Detection

FINISH	
BL	Black textured
DB	Dark bronze
GYS	Light gray smooth
PS	Platinum silver
WH	White textured

SENSOR OPTIONS	
MOB[3,7,9]	Occupancy Sensor (33% or 50% dimming
OCS[9,10]	Occupancy Sensor (on/off)

[1] Not available on 24L-27
[2] Not available @347V or 480V input
[3] Not available on 48L-110
[4] 36L-80 only
[5] When ordering Energeni, specify the routine setting code (example GENI-04). See Energeni brochure and instructions for setting table and options. Not available with sensor options.
[6] Must specify group and zone information at time or order. See www.hubbell-automation.com/products/sitesync/ for further details.
[7] Specify time delay; dimming level and mounting height.
[8] Not available with SWP or SWPM control options
[9] Not available with other control or sensor options
[10] Specify mounting height
[11] This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: http://cdn.beaconproducts.com/content/products/specs/specs_files/Endura_turtle_LED_spec_sheet.pdf

PRECOMMISSIONED SITESYNC ORDERING INFORMATION: When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit www.hubbell-automation.com/products/sitesync/ or contact Hubbell Lighting tech support at (800) 345-4928.

SiteSync fixtures with occupancy sensor (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: EDR/24L-55/4K7/5W/UNV/SWP/BL — SiteSync only
EDR/24L-55/4K7/5W/UNV/SWPM-20F/BL — SiteSync with Motion Control

MOB ORDERING INFORMATION: When ordering a fixture with a dimming occupancy sensor (MOB), please specify the appropriate information. These settings are specified in the ordering as shown in the example below.

EDR/24L-55/4K7/5R/UNV/MOB - 1 to 30 min. - 33% or 50% - ?? / BL

High to Dim Delay | Low Level | Mounting Height (ft.)

Accessories and Services (Ordered Separately)

Catalog Number	Description
SWUSB*	SiteSync interface software loaded on USB flash drive for use with owner supplied PC (Windows based only). Includes SiteSync license, software and USB radio bridge node.
SWTAB*	Windows tablet and SiteSync interface software. Includes tablet with preloaded software, SiteSync license and USB radio bridge node.
SWBRG+	SiteSync USB radio bridge node only. Order if a replacement is required or if an extra bridge node is requested.

* When ordering SiteSync at least one of these two interface options must be ordered per project.
+ If needed, an additional Bridge Node can be ordered.

SiteSync



SiteSync Lighting Control is available from our most popular brands in a broad range of award-winning product families.

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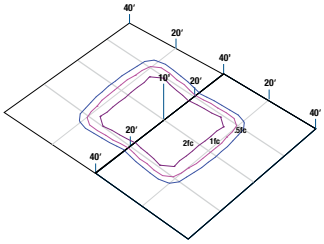
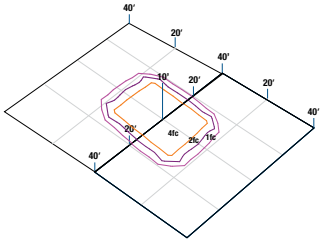
PHOTOMETRICS

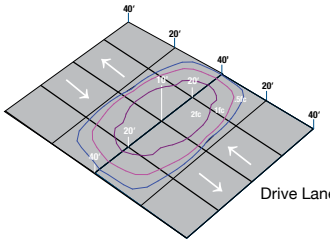
Type V Square Medium
EDR-48L-110-5QM



Type V Square Narrow
EDR-48L-110-5QN



Type V Rectangular
EDR-48L-110-5R



Drive Lane Direction

PERFORMANCE DATA

				5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
# LED'S	DRIVE CURRENT (MILLIAMPS)	SYSTEM WATTS	DISTRIBUTION TYPE	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G
24	350mA	27W	2X2	3567	129	N/A	N/A	N/A	3640	131	N/A	N/A	N/A	3278	118	N/A	N/A	N/A
			4X4	3490	126	N/A	N/A	N/A	3561	129	N/A	N/A	N/A	3207	116	N/A	N/A	N/A
			5QM	3275	118	2	0	0	3341	121	2	0	0	3010	109	2	0	0
			5QN	3072	111	2	1	2	3135	113	2	1	2	2824	102	2	1	2
			5R	3330	120	2	1	2	3398	123	2	1	2	3061	110	2	1	2
			5W	3309	119	2	1	1	3376	122	2	1	1	3041	110	2	1	1
			5X3	3300	119	N/A	N/A	N/A	3367	122	N/A	N/A	N/A	3033	109	N/A	N/A	N/A
			5X5	3373	122	N/A	N/A	N/A	3441	124	N/A	N/A	N/A	3100	112	N/A	N/A	N/A
24	700mA	55W	2X2	6611	121	N/A	N/A	N/A	3746	124	N/A	N/A	N/A	6076	111	N/A	N/A	N/A
			4X4	6468	119	N/A	N/A	N/A	6600	121	N/A	N/A	N/A	5944	109	N/A	N/A	N/A
			5QM	6069	111	2	0	1	6193	114	2	0	1	5578	102	2	0	1
			5QN	5694	104	3	1	2	5810	107	3	1	2	5233	96	3	1	2
			5R	6172	113	3	1	3	6298	116	3	1	3	5673	104	3	1	3
			5W	6132	113	3	1	1	6257	115	3	1	1	5636	103	3	1	1
			5X3	6115	112	N/A	N/A	N/A	6240	114	N/A	N/A	N/A	5621	103	N/A	N/A	N/A
			5X5	6251	115	N/A	N/A	N/A	6378	117	N/A	N/A	N/A	5745	105	N/A	N/A	N/A
36	700mA	80W	2X2	9916	121	N/A	N/A	N/A	10119	124	N/A	N/A	N/A	9114	112	N/A	N/A	N/A
			4X4	9702	119	N/A	N/A	N/A	9900	121	N/A	N/A	N/A	8917	109	N/A	N/A	N/A
			5QM	9103	111	3	0	1	9289	114	3	0	1	8367	102	3	0	1
			5QN	8541	105	4	1	3	8715	107	4	1	3	7850	96	4	1	3
			5R	9258	113	3	2	3	9447	116	3	2	3	8509	104	3	2	3
			5W	9198	113	3	2	2	9386	115	3	2	2	8454	103	3	2	2
			5X3	9173	112	N/A	N/A	N/A	9360	115	N/A	N/A	N/A	8431	103	N/A	N/A	N/A
			5X5	9376	115	N/A	N/A	N/A	9568	117	N/A	N/A	N/A	8617	105	N/A	N/A	N/A
48	700mA	110W	2X2	13222	121	N/A	N/A	N/A	13492	123	N/A	N/A	N/A	12152	111	N/A	N/A	N/A
			4X4	12936	118	N/A	N/A	N/A	13200	120	N/A	N/A	N/A	11889	108	N/A	N/A	N/A
			5QM	12138	110	3	0	2	12386	113	3	0	2	11156	102	3	0	2
			5QN	11388	104	4	2	3	11620	107	4	2	3	10466	96	4	2	3
			5R	12344	113	3	2	3	12596	116	3	2	3	11345	104	3	2	3
			5W	12264	112	4	2	2	12514	115	4	2	2	11272	103	4	2	2
			5X3	12231	112	N/A	N/A	N/A	12480	114	N/A	N/A	N/A	11241	103	N/A	N/A	N/A
			5X5	12501	114	N/A	N/A	N/A	12757	117	N/A	N/A	N/A	11490	105	N/A	N/A	N/A

[1]Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.

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HUBBELL Lighting

ELECTRICAL DATA

# OF LEDS	NUMBER OF DRIVERS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	SYSTEM POWER (w)	CURRENT (Amps)
24	1	350mA	120	27	0.2
			277		0.1
			347		0.1
			480		0.1
24	2	700mA	120	55	0.5
			277		0.2
			347		0.2
			480		0.1
36	1	700mA	120	80	0.7
			277		0.3
			347		0.2
			480		0.2
48	1	700mA	120	110	0.9
			277		0.4
			347		0.3
			480		0.2
60	1	700mA	120	136	1.1
			277		0.5
			347		0.4
			480		0.3

AMBIENT TEMPERATURE		LUMEN MULTIPLIER
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	77°F	1.00

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).

PROJECTED LUMEN MAINTENANCE

AMBIENT TEMP.	0	25,000	50,000	[1]TM-21-11 60,000	100,000	Calculated L70 (HOURS)
25°C / 77°C	1.00	0.97	0.95	0.94	0.91	434,000

[1] Projected per IESNA TM-21-11
Data references the extrapolated performance projections for the base model in a 25°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

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VIPER S OPTICS STRIKE

SMALL VIPER LUMINAIRE

Cat.#	
Job	Type

BEACON design . performance . technology

Approvals

SPECIFICATIONS

Intended Use:

The Beacon Viper luminaire is available with a wide choice of different LED Wattage configurations and optical distributions designed to replace HID lighting up to 400W MH or HPS.

Construction:

- Manufactured with die cast aluminum.
- Coated with a polyester finish that meets ASTM B117 corrosion test requirements and ASTM D522 cracking and loss of adhesion test requirements.
- External hardware is corrosion resistant.
- One piece optical cartridge system consisting of an LED engine, LED lamps, optics, gasket and stainless steel bezel.
- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one piece optical system.
- Two-piece silicone and micro-cellular polyurethane foam gasket ensures a weather-proof seal around each individual LED.

Electrical:

- 100V through 277V, 50 Hz to 60 Hz (UNV), or 347V or 480V input.
- Power factor is ≥.90 at full load.
- Dimming drivers are standard, but must contact factory to request wiring leads for purpose of external dimming controls.
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600VAC at 90°C or higher.
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only.
- Fixture electrical compartment shall contain all LED driver components and shall be provided with a push-button terminal block for AC power connections.
- Surge protection - 20kA.
- Optional 7-pin ANSI C136.41-2013 twist-lock photo control receptacle available. Compatible with ANSI C136.41 external wireless control devices.
- Lifeshield™ Circuit - protects luminaire from excessive temperature. The device shall activate at a specific, factory-preset temperature, and progressively reduce power over a finite temperature range. Operation shall be smooth and undetectable to the eye. Thermal circuit is designed to "fail on", allowing the luminaire to revert to full power in the event of an interruption of its power supply, or faulty wiring connection to the drivers. The device shall be able to co-exist with other 0-10V control devices (occupancy sensors, external dimmers, etc.).

Controls/Options:

- Available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the Motion Response system reduces the wattage to factory preset level, reducing the light level accordingly. When motion is detected by the PIR sensor, the luminaire returns to full wattage and full light output. Please contact Beacon Products if project requirements vary from standard configuration.
- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night (see www.beaconproducts.com/products/energeni).
- In addition, Viper can be specified with **SiteSync™** wireless control system for reduction in energy and maintenance costs while optimizing light quality 24/7. For more details, see ordering information or visit: www.hubbelllighting.com/sitesync

Installation:

- Mounting options for horizontal arm, vertical tenon or traditional arm mounting available. Mounting hardware included.

Finish:

- IFS polyester powder-coat electrostatically applied and thermocured. IFS finish consists of a five stage pretreatment regimen with a polymer primer sealer and top coated with a thermoset super TGIC polyester powder coat finish.
- The finish meets the AAMA 2604 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds.

Certifications/Ratings:

- DesignLights Consortium (DLC) qualified, consult DLC website for more details: http://www.designlights.org/QPL
- Certified to UL 1598, UL 8750 and CSA C22.2 No.250.0
- IDA approved
- This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: http://www.beaconproducts.com/products/vipersmall

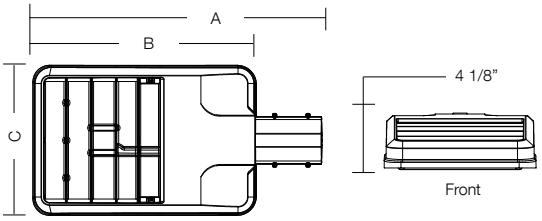
Warranty:

Five year limited warranty for more information visit: www.hubbelllighting.com/resources/warranty

PRODUCT IMAGE(S)

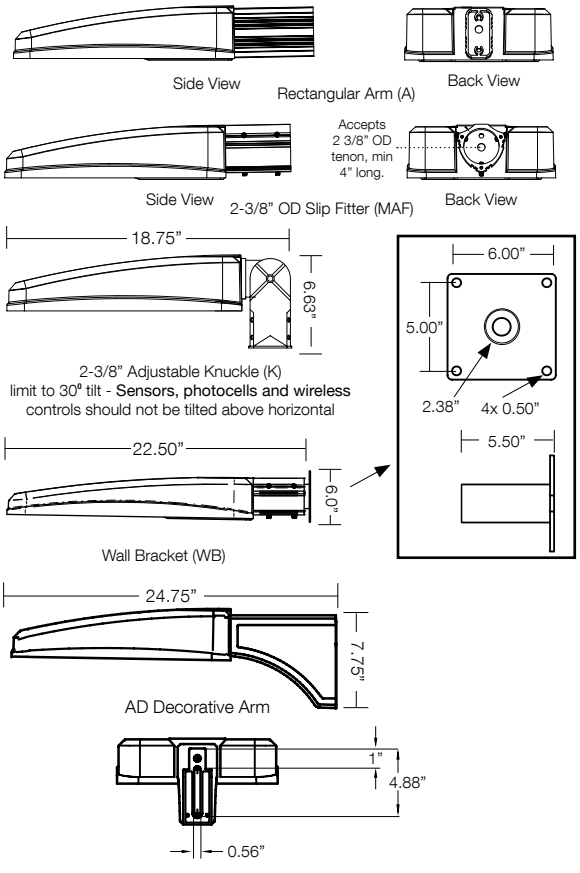


DIMENSIONS



A	B	C	Weight:	EPA
21.75" (552 mm)	16.75" (425 mm)	11.25" (286 mm)	15.0 lbs (6.8 kg)	.67 ft²

MOUNTING OPTIONS



CERTIFICATIONS/LISTINGS

C US

*3000K and warmer CCTs only

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HUBBELL Lighting

ORDERING INFORMATION ORDERING EXAMPLE: VPS/24L-55/4K7/4W/UNV/A/DBT/7PR-TL/GENI-04/BC

VPS										

SERIES
- **VPS** Viper

LED ENGINE
- **24L-55** 55W, LED array
- **36L-65** 65W, LED array
- **36L-80** 80W, LED array
- **48L-110** 110W, LED array
- **60L-136** 136W, LED array

CCT/CRI[7]
- **3K7** 3000K, 70 CRI
- **4K7** 4000K, 70 CRI
- **5K7** 5000K, 70 CRI

ROTATION
- Leave blank for no rotation
- **L[5]** Optic rotation left
- **R[5]** Optic rotation right

VOLTAGE
- **UNV** 120-277V
- **120** 120V
- **208** 208V
- **240** 240V
- **277** 277V
- **347** 347V
- **480** 480V

COLOR
- **BL** Black Textured
- **DB** Dark Bronze Textured
- **GYS** Light Gray Smooth
- **PS** Platinum Silver Smooth
- **WH** White Textured
- **CC** Custom Color

OPTIONS
- **F** Fusing
- **BSP** Bird Spikes
- **BC** BacksheidId (available for FR, 2, 3, 4, 4W Optics)

DISTRIBUTION
- **FR** Type 1/Front Row
- **2** Type 2
- **3** Type 3
- **4** Type 4
- **4W** Type 4 Wide
- **5QM** Type 5QM
- **5R** Type 5R (rectangular)
- **5W** Type 5W (round wide)
- **TC** Tennis Court

MOUNTING
- **A** Rectangular Arm (formerly RA) for square or round pole
- **MAF** Mast Arm Fitter (formerly SF2) for 2-3/8" OD horizontal arm
- **K** Knuckle (formerly PK2) limit to 45° tilt or 2-3/8" OD horizontal arm or vertical tenon
- **WB** Wall Bracket
- **AD** Universal Arm for square pole
- **AD3** Universal Arm for 2.4"-4.1" round pole
- **AD4** Universal Arm for 4.2" -5.3" round pole
- **AD5** Universal Arm for 5.5" -5.9" round pole
- **AD6** Universal Arm for 6.0"-6.5" round pole

CONTROL OPTIONS
- **7PR** 7-Pin Receptacle only (shorting cap, photo control, or wireless control provided by others)
- **7PR-SC** 7-Pin Receptacle w/Shorting Cap
- **7PR-TL** 7-Pin Receptacle w/Twist Lock photo control
- **SCP/_F[1,2,6]** Programmable Occupancy Sensor w/ daylight control (120-277 volts only)
- **GENI-XX[3]** ENERGENI
- **SWP[1,4]** SiteSync Pre-Commission
- **SWPM[1,2,4]** SiteSync Pre-Comm w/ Sensor

HOUSE SIDE SHIELD ACCESSORIES
- **HSS/VP-S/90-FB/XXX** 90° shield front or back
- **HSS/VP-S/90-LR/XXX** 90° shield left or right
- **HSS/VP-S/270-FB/XXX** 270° shield front or back
- **HSS/VP-S/270-LR/XXX** 270° shield left or right
- **HSS/VP-S/360/XXX** Full shield

(Replace XXX with notation for desired finish color)
(Refer to page 5 for shield images)

MOUNTING ACCESSORIES
- **VPL-AD-RPA3** 2.4"-4.1" Round Pole Adapter for AD arm
- **VPL-AD-RPA4** 4.2"-5.3" Round Pole Adapter for AD arm
- **VPL-AD-RPA5** 5.5"-5.9" Round Pole Adapter for AD arm
- **VPL-AD-RPA6** 6.0"-6.5" Round Pole Adapter for AD arm

[1] Not available with other wireless control or sensor options
[2] Specify mounting height; 8=8' or less, 40=9' to 40'
[3] Specify routine setting code (example GENI-04). See ENERGENI brochure and instructions for setting table and options. Not available with sensor or SiteSync options.
[4] Specify group and zone at time of order. See www.hubbelllighting.com/sitesync for further details. Order at least one SiteSync interface Accessory SWUSB or SWTAB. Each option contains SiteSync License, GUI, and Bridge Node
[5] Only available with 1A, 2, 3, 4, 4W and 5R distributions
[6] Order at least one SCP-REMOTE per project location to program and control the occupancy sensor.
[7] This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: http://cdn.beaconproducts.com/content/products/specs/specs_files/Viper_Small_LED_turtle_spec_sheet.pdf

PRECOMMISSIONED SITESYNC ORDERING INFORMATION: When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit www.hubbell-automation.com/products/sitesync/ or contact Hubbell Lighting tech support at (800) 345-4928.

SiteSync fixtures with Motion control (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: VPS/24L-55/4K7/3/UNV/A/DBT/SWP/ SiteSync only
VPS/24L-55/4K7/3/UNV/A/DBT/SWPM-40F/ SiteSync with Motion Control

Accessories and Services (Ordered Separately)

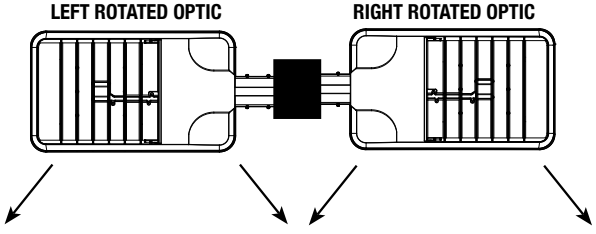
Catalog Number	Description
SWUSB*	SiteSync interface software loaded on USB flash drive for use with owner supplied PC (Windows based only). Includes SiteSync license, software and USB radio bridge node
SWTAB*	Windows tablet and SiteSync interface software. Includes tablet with preloaded software, SiteSync license and USB radio bridge node.
SWBRG	SiteSync USB radio bridge node only. Order if a replacement is required or if an extra bridge node is requested.
SCP-REMOTE	Remote Control for SCP/_F option. Order at least one per project to program and control
SW7PR+	SiteSync 7 Pin on fixture module On/Off/Dim, Daylight Sensor 120-480VAC

* When ordering SiteSync at least one of these two interface options must be ordered per project.
+ Available as a SiteSync retrofit solution for fixtures with an existing 7pin receptacle.

Hubbell Control Solutions - Accessories (sold separately)

Catalog Number	Description	HCS System
NXOFM-1R1D-UNV	On-fixture Module (7-pin), On / Off / Dim, Daylight Sensor with HubbNET Radio and Bluetooth® Radio, 120-480VAC	NX Distributed Intelligence™
WIR-RME-L	On-fixture Module (7-pin or 5-pin), On / Off / Dim, Daylight Sensor with wiSCAPE Radio, 110-480VAC	wiSCAPE® Lighting Control

For additional information related to these accessories please visit www.hubbellcontrolsolutions.com. Options provided for use with integrated sensor, please view specification sheet ordering information table for details.



SiteSync 7-Pin Module


SW7PR

- SiteSync features in a new form
- Available as an accessory for new construction or retrofit applications (with existing 7-Pin receptacle)
- Does no interface with occupancy sensors

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PERFORMANCE DATA

# LED'S	DRIVE CURRENT (MILLIAMPS)	SYSTEM WATTS	DISTRIBUTION TYPE	5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
				LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G
24	700 mA	55W	FR	6357	118	1	0	1	6486	120	1	0	1	5804	107	1	0	1
			2	6132	114	1	0	1	6257	116	1	0	2	5599	104	1	0	1
			3	6015	111	1	0	2	6137	114	1	0	2	5492	102	1	0	2
			4	5921	110	1	0	2	6034	112	1	0	2	5400	100	1	0	2
			4W	5805	108	1	0	2	5921	110	1	0	2	5282	98	1	0	2
			5QM	6022	112	2	0	1	6145	114	2	0	1	5499	102	2	0	1
			5R	6063	112	3	0	3	6187	115	3	0	3	5536	103	3	0	3
			5W	5908	109	3	0	1	6028	112	3	0	1	5908	102	3	0	1
			TC	6183	115	1	0	1	6309	118	1	0	1	5645	105	1	0	1
36	560 mA	65W	FR	7864	121	1	0	1	8041	124	1	0	1	7189	111	1	0	1
			2	7586	117	1	0	2	7757	119	1	0	2	6934	107	1	0	2
			3	7441	114	1	0	2	7609	117	1	0	2	6802	105	1	0	2
			4	7317	110	1	0	2	7482	112	1	0	2	6688	100	1	0	2
			4W	7325	113	1	0	2	7490	115	1	0	2	6696	103	1	0	2
			5QM	7450	115	3	0	1	7618	117	3	0	1	6810	105	3	0	1
			5R	7501	115	3	0	3	7670	118	3	0	3	6857	105	3	0	3
			5W	7309	112	3	0	2	7473	115	3	0	2	6681	103	3	0	1
36	700 mA	80W	FR	9535	118	1	0	1	9730	120	1	0	1	8706	107	1	0	1
			2	9197	114	1	0	2	9385	116	1	0	2	8398	104	1	0	2
			3	9022	111	1	0	2	9206	114	1	0	2	8238	102	1	0	2
			4	8871	110	1	0	2	9052	112	1	0	2	8100	100	1	0	2
			4W	8707	108	1	0	2	8881	110	1	0	2	7923	98	1	0	2
			5QM	9033	112	3	0	1	9217	114	3	0	1	8248	102	3	0	1
			5R	9095	112	3	0	3	9280	115	3	0	3	8304	103	3	0	3
			5W	8861	109	3	0	2	9043	112	3	0	2	8092	100	3	0	2
			TC	9275	115	1	0	1	9464	118	1	0	1	8468	105	1	0	1
48	700 mA	110W	FR	12713	118	1	0	1	12973	120	2	0	1	11608	107	1	0	1
			2	12263	114	2	0	2	12513	116	2	0	2	11197	104	2	0	2
			3	12029	111	2	0	2	11275	114	2	0	2	10984	102	1	0	2
			4	11828	110	1	0	3	12069	112	1	0	3	10800	100	1	0	2
			4W	11609	108	1	0	3	11841	110	1	0	3	10564	98	1	0	3
			5QM	12044	112	3	0	2	12290	114	3	0	2	10997	102	3	0	1
			5R	12126	112	3	0	3	12374	115	3	0	3	11072	103	3	0	3
			5W	12126	109	4	0	2	12057	112	4	0	2	10789	100	4	0	2
			TC	12366	115	1	0	2	12619	118	1	0	2	11290	105	1	0	2
60	700 mA	136W	FR	15891	117	2	0	2	16216	120	2	0	2	14511	107	2	0	1
			2	15329	113	2	0	2	15642	116	2	0	2	13997	103	2	0	2
			3	15037	111	2	0	3	15344	113	2	0	3	13730	101	2	0	3
			4	14784	109	1	0	3	15086	111	1	0	3	13500	100	1	0	3
			4W	14511	108	2	0	4	14802	110	2	0	4	13205	98	2	0	3
			5QM	15055	111	3	0	2	15362	114	3	0	2	13747	102	3	0	2
			5R	15158	112	4	0	4	15469	114	4	0	4	13841	102	4	0	4
			5W	14781	109	4	0	2	15083	111	4	0	2	13495	100	4	0	2
			TC	15458	115	1	0	2	15834	118	1	0	2	14113	105	1	0	2

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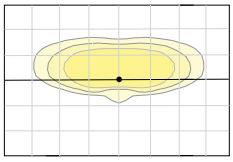
PHOTOMETRICS

Type FR - Front Row/Auto Optic



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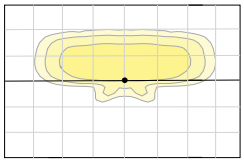

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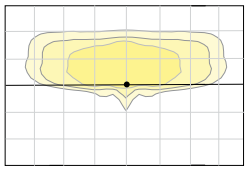

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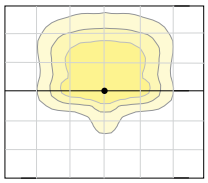

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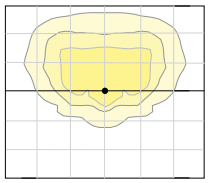

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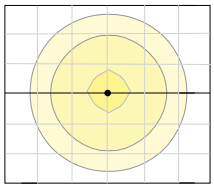

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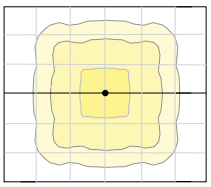

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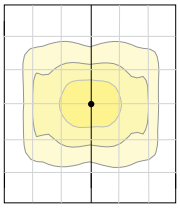


[1]Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-use environment and application.

ELECTRICAL DATA

# OF LEDS	NUMBER OF DRIVERS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	SYSTEM POWER (w)	CURRENT (Amps)
24	2	700 mA	120	55	0.5
			277		0.2
			347		0.2
			480		0.1
36	1	560 mA	120	65	0.65
			277		0.28
			347		0.22
			480		0.16
		700 mA	120	80	0.7
			277		0.3
			347		0.2
			480		0.2
48	1	700 mA	120	110	0.9
			277		0.4
			347		0.3
			480		0.2
60	1	700 mA	120	136	1.1
			277		0.5
			347		0.4
			480		0.3

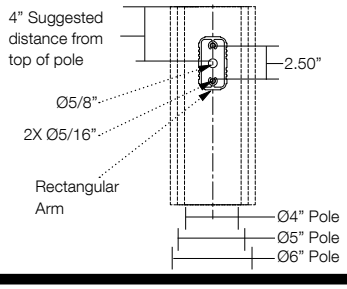
PROJECTED LUMEN MAINTENANCE

AMBIENT TEMP.	0	25,000	50,000	[1]TM-21-11 60,000	100,000	Calculated L70 (HOURS)
25°C / 77°C	1.00	0.97	0.95	0.95	0.92	>377,000

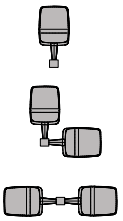
[1] Projected per IESNA TM-21-11
Data references the extrapolated performance projections for the base model in a 25°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

DRILL PATTERN

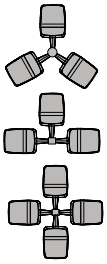
RECTANGULAR ARM (A)
Compatible with Pole drill pattern B4



EPA



Config.	EPA
1	.67
2 @ 90°	1.06
2 @ 180°	1.34



Config.	EPA
3 @ 120°	1.68
3 @ 90°	1.73
4 @ 90°	2.12

TENON TOP POLE BRACKET ACCESSORIES (Order Separately)

(2 3/8" OD tenon)

Catalog Number	Description
SETAVP-XX	Square tenon adapter (4 at 90º) for A - Rectangular Arm mounting option only
RETAVP-XX	Round tenon adapter (4 at 90º) for A - Rectangular Arm mounting option only
TETAVP-XX	Hexagonal tenon adapter (4 at 90º) for A - Rectangular Arm mounting option only
SETA2XX	Square tenon adapter (4 at 90º) for AD - Universal Arm mounting option only
RETA2XX	Round tenon adapter (4 at 90º) for AD3 - Universal Arm mounting option only
TETA2XX	Hexagonal tenon adapter (3 at 120º) for AD - Universal Arm mounting option only

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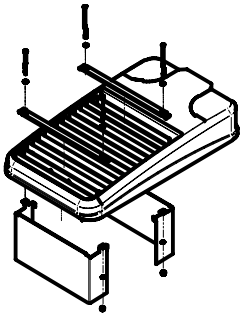
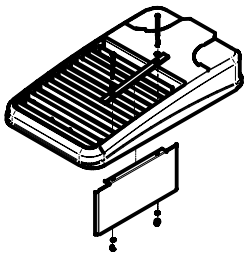
HUBBELL Lighting

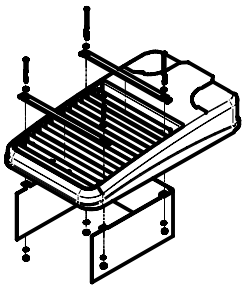
HOUSE SIDE SHIELD FIELD INSTALL ACCESSORIES



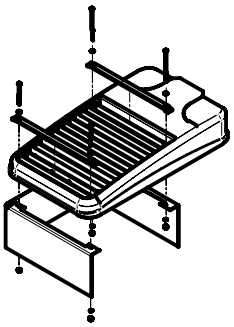
HSS/VP-S/90-FB/XXX
90° shield front or back
(2 shields shown)



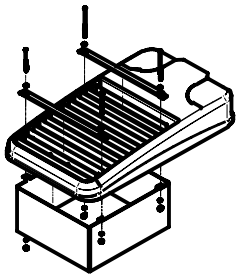
HSS/VP-S/90-LR/XXX
90° shield left or right
(1 shield shown in left orientation)



HSS/VP-S/270-FB/XXX
270° shield front or back
(1 shield shown in back orientation)

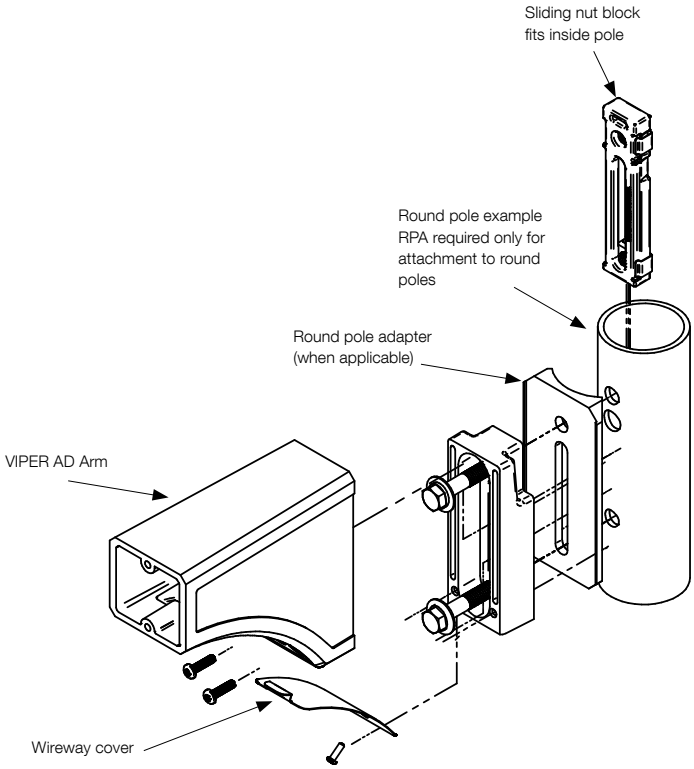


HSS/VP-S/270-LR/XXX
270° shield left or right
(1 shield shown in right orientation)

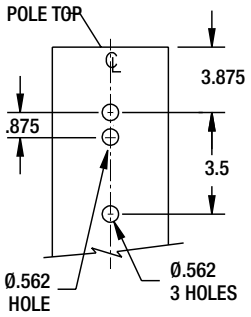


HSS/VP-S/360/XXX
Full shield (1 shield shown)

AD ARM MOUNTING INSTRUCTIONS



DECORATIVE ARM (AD)
Compatible with pole drill pattern S2



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GEOPAK SERIES SIZE 1 LED

Architectural Wallpack

TRP1/RDI1/QSP1

NEW

Cat.#	
Job	Type

HUBBELL Outdoor Lighting

Approvals

SPECIFICATIONS

APPLICATIONS

- Small sized architectural wallpacks in three stylish shapes with molded contours to accentuate building architecture. Provides excellent illumination in energy-saving LED systems.
- Back box accessory available for surface conduit application.

Construction:

- Housing is made from die-cast aluminum with a hinged back-plate for ease of installation and maintenance.
- The LED bezel and trim-plate are made of stainless steel.
- Five powder coat standard finishes, plus custom color options.
- Wet Location Listed to UL924 and UL1598 Standard.

LED:

- 12 high power LEDs delivering up to 3,000 lumens.
- Up to 118 lumens per watt
- Type II, III and IV distributions for a wide variety of applications.
- Zero uplight (U0), dark sky, neighbor friendly

Electrical:

- 120-277 operation, 50/60Hz
- 0-10V dimming driver standard
- 10kA surge protector
- Photocell and occupancy sensor options available for complete on/off and dimming control

Battery Backup:

- Intergral Battery Backup provides emergency lighting for the required 90 minute path of egress.
- Includes a long-life Lithium Iron Phosphate battery with optional battery heater for cold temperature application.
- Utilizes 4 LEDs in emergency mode with 657 lumens. Each of the 4 LEDs in emergency are designed to function independently in the unlikely event of a single LED malfunction
- Spectron® self-testing/self-diagnostic electronics are included standard
- Independent dedicated driver and LED array for battery/emergency mode operation.

Installation:

- Universal plate for mounting to standard 3 1/2" and 4" square electrical boxes. All connections are made from connections at the rear of the unit.
- Optional back-box accessory available for surface conduit application. See BB-Geo accessories.

Listings:

- UL 1598 listed for use in wet locations
- Drivers IP66 and RoHS compliant
- DesignLights Consortium® (DLC) qualified. Please refer to the DLC website for specific product qualifications at www.designlights.org

Warranty:

- For more information visit:

http://www.hubbelloutdoor.com/resources/warranty/

PRODUCT IMAGE(S)

GEOPAK



Trapezoid



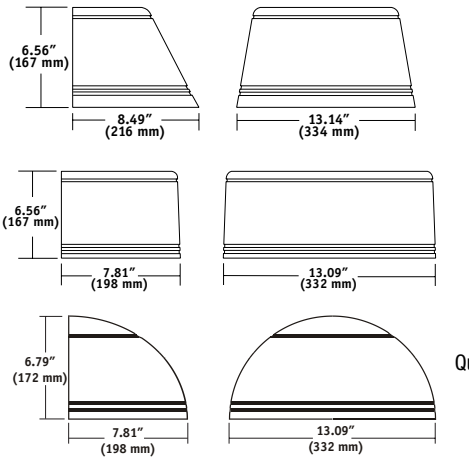
Round



Quartersphere

Powered by DUALLITE

DIMENSIONS



SHIPPING INFORMATION

Catalog Number	Weight (lbs)	Carton Dimensions		
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)
TRP1	11.5	17.0	9.9	10.0
RDI1	11.5	18.0	11.0	9.25
QSP1	10.5	17.0	9.6	10.5

CERTIFICATIONS/LISTINGS

C US

*3000K and warmer CCTs only

ORDERING INFORMATION

ORDERING EXAMPLE: TRP-12L-20-4K-3-1-BL-SCP-EH

HOUSING	VERSION	WATTAGE	CCT/CRI	DISTRIBUTION	VOLTAGE	FINISH	CONTROL OPTIONS	OPTIONS
TRP1 Trapezoid	**12L** 12 LEDS	**15** 15 watts	**3K7** 3000K, 70CRI	**2** Type II	**U** 120-277	**BL** Black	**PCU** Button Photocell	**F**[4] Fusing (only available with STD fixture configuration, 120-277V only)
RDI1 Radius		**20** 20 watts	**4K7** 4000K, 70CRI	**3** Type III	**1** 120	**DB** Bronze	**SCP**[2,3] Programmable Motion Sensor	**E**[1] Battery Pack (0˚C)
QSP1 Quartersphere		**30** 30 watts	**5K7** 5000K, 70CRI	**4** Type IV	**2** 208	**GR** Gray	**SPECIFY SCP HEIGHT**	**EH**[1] Battery Pack (-30˚C) with heater
					3 240	**PS** Platinum	**8F** Up to 8ft mount height	
					4 277	**WH** White	**20F** Up to 20ft mount height	
						CC Custom		

[1] Voltage specific (120 or 277V only)
[2] Must order minimum of one remote control to program dimming settings, 0-10V fully adjustable dimming with automatic daylight calibration and different time delay settings, 120-277V only
[3] PCU option not applicable, included in sensor
[4] Must specify input voltage (120, 208, 240 or 277)

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ACCESSORIES - Order separately

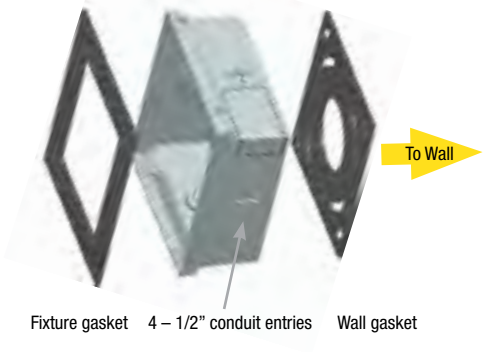
Catalog Number	Description
SCP-REMOTE[2]	Remote control for SCP option. Order at least one per project to program and control.
BB-GEO-XX	Back box with 4 - 1/2" threaded conduit holes, specify finish by replacing "XX" with finish selection, eg. Dark Bronze "DB"

[2] Must order minimum of one remote control to program dimming settings, 0-10V fully adjustable dimming with automatic daylight calibration and different time delay settings, 120V-277V only



BB-GEO-XX – Mounted to luminaire

BB-GEO-XX



PERFORMANCE DATA (AC/Standard Configurations)

				5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
# OF LEDS	DRIVE CURRENT	SYSTEM WATTS	DIST. TYPE	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G
12	350mA	13.9	2	1635	118	1	1	1	1577	113	1	1	1	1497	108	1	1	1
			3	1613	116	1	0	1	1556	112	1	0	1	1477	106	1	0	1
			4	1607	116	0	0	1	1550	111	0	0	1	1471	106	0	0	1
	500mA	19.9	2	2268	114	1	1	1	2176	109	1	1	1	2077	104	1	1	1
			3	2245	113	1	0	1	2140	108	1	0	1	2049	103	1	0	1
			4	2229	112	0	0	1	2150	108	0	0	1	2041	103	0	0	1
	700mA	28.2	2	2942	104	1	1	1	2885	102	1	1	2	2721	96	1	1	1
			3	2912	103	1	0	1	2836	101	1	0	1	2685	95	1	0	1
			4	2892	103	1	0	1	2789	99	1	0	1	2674	95	1	0	1

Electrical Data

Input Power Consumption

Drive Current (mA)	Input Voltage (V)	System Power (w)	Current (Amps)
350mA	120	13.9	0.12
	277		0.05
500mA	120	19.9	0.17
	277		0.07
700mA	120	28.2	0.24
	277		0.10

Battery backup units consume additional power during charging (maximum 32.2 watts for E, 50.7 watts for EH)

Projected Lumen Maintenance

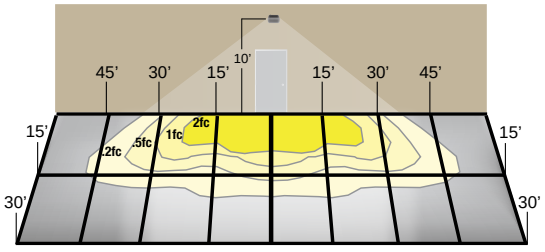
Ambient Temp.	Operating Hours 0	25,000	50,000	TM-21-11[1] 60,000	100,000	L70 (hours)
25°C/77°F	1.00	0.98	0.97	0.95	0.91	>345,000
40°C/104°F	1.00	0.96	0.95	0.92	0.87	>268,000

LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

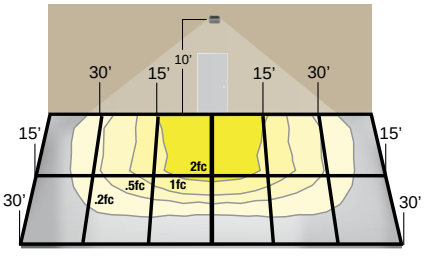
AMBIENT TEMPERATURE		LUMEN MULTIPLIER
0° C	32° F	1.02
10° C	50° F	1.01
20° C	68° F	1.00
25° C	77° F	1.00
30° C	86° F	1.00
40° C	104° F	0.99
50° C	122° F	0.98

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

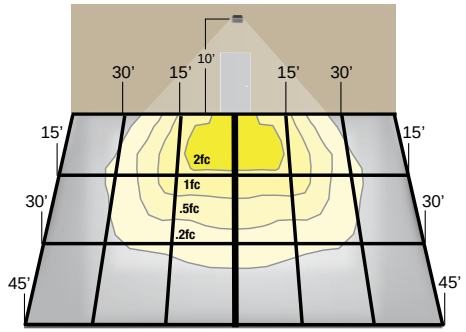
PHOTOMETRIC REPORTS
(30w, 4000K shown)



TYPE II



TYPE III



TYPE IV (Forward throw)

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GeoPak - Battery Back Up

Functional Circuitry: Transient surge protection device on AC input. Upon failure of the normal utility power, an LED driver is automatically activated to power the emergency LEDs. Upon resumption of normal utility power, the LED driver is turned off, and the battery is recharged through a micro-controller based 3-stage charger. The battery is a maintenance-free Lithium Iron Phosphate (LiFePo) type. A low voltage battery disconnect (LVD) feature protects the battery from severe damage during prolonged power failures. Manual testing is available at any time using the push-to-test button. The optional heater features a heating wrap and thermostat to maintain optimal battery temperature during charge or discharge. The GeoPak includes the following features:

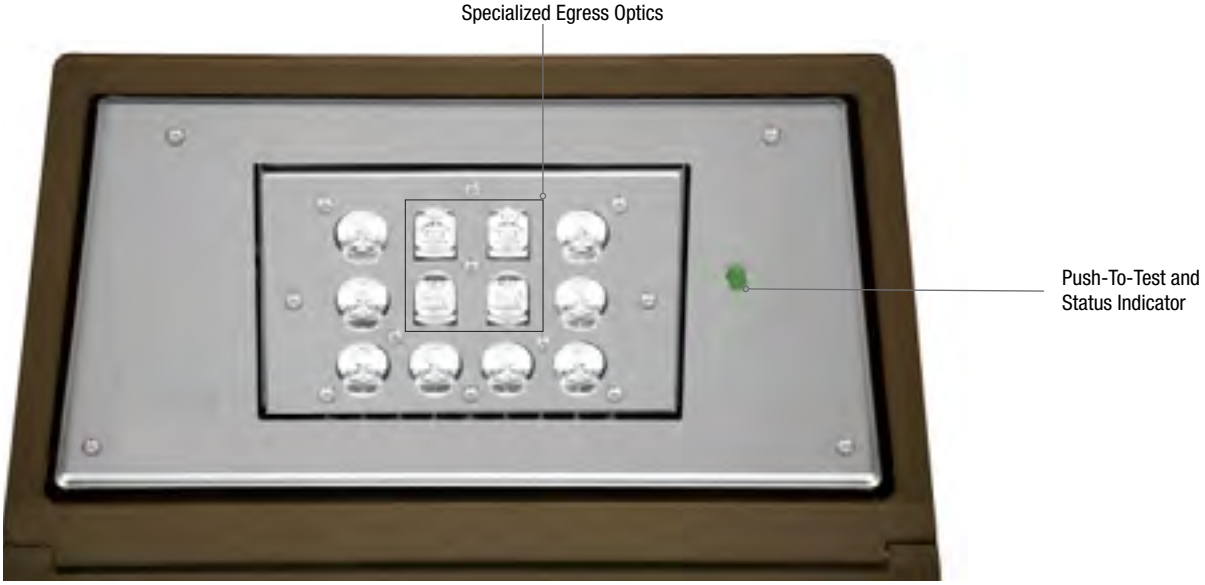
- Battery re-charge within 24 hours
- AC Lock-out circuit
- Self-diagnostics monitors LED status, LED driver circuit, battery capacity and charger function and displays any fault detection by means of a flashing code.
- Self-Test feature runs a 1 minute test once a month and an alternating 30 or 60 minute test once every 6 months. Multi-color LED indicator provides visible fault detection and charging status.
- User initiated 1, or 90-minute system test feature
- 15 minute re-transfer delay
- Automatic unit transfer in brown-out conditions (below 80% of nominal AC input voltage).
- Battery backup units consume 6 watts when charging a dead battery and 2 watts during maintenance charging. EH (units with a heater) consume up to an additional 8 watts when charging if the battery temp is lower than 10°C

Emergency Photometric Performance (1 fc average .1 fc minimum)

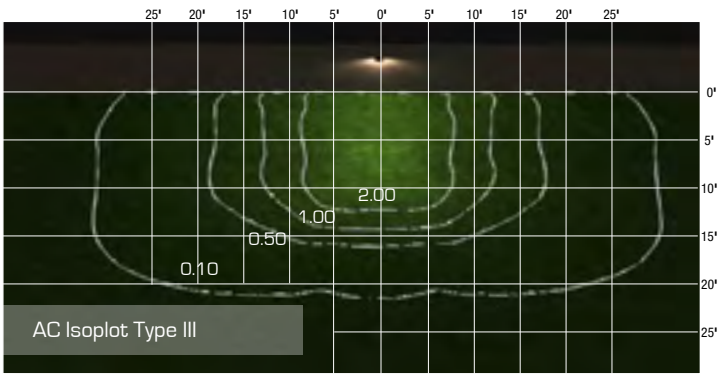
28’ multi-unit spacing at 10’ MH with 0/30/10 reflectances on a 6’ path

26’ x 10’ single unit coverage at 10’ MH with 0/30/10 reflectances

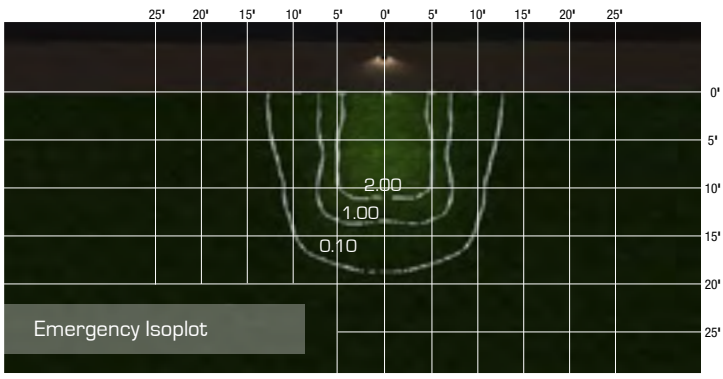
6’ x 19’ forward throw coverage at 10’ MH with 0/30/10 reflectances



Normal Mode



Emergency Mode



Provides Life Safety Code average illuminance of 1.0 fc. Assumes open space with no obstructions.

Diagrams for illustration purposes only, please consult factory for application layout.

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ARCHETYPE
ARCHITECTS




ARCHETYPE
ARCHITECTS

ENDURA SERIES

WALL/BUILDING MOUNT

Cat.#	
Job	Type

BEACON design . performance . technology

Approvals

SPECIFICATIONS

Intended Use:
The Endura is a ceiling surface mounted or pendant mounted parking structure luminaire with a field replaceable LED light-engine & optical bezel system. Internal components are totally enclosed in a rain-tight and corrosion-resistant die cast aluminum housing. The Endura Luminaire is CSA certified and suitable for damp locations (wet location available on request).

Construction:
- Die cast aluminum two-piece housing
- Shape of the top housing is designed as a bird nesting deterrent
- Die cast main (thermal) housing provides direct-heat exchange between the LED light engine and the cool outdoor air
- Main housing is designed with heat dissipating fins for LED thermal management without the use of metallic screens, cages, or fans
- Main and top housings are designed to hinge open for easy mounting and easy access

LED/Optics:
- Endura luminaire is supplied with an optical one piece cartridge system consisting of an LED engine, LED lamps, optics, gasket and stainless steel bezel
- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one piece optical system
- Two-piece silicone and polycarbonate foam gasket ensures a weather-proof seal around each individual LED
- Endura comes standard with 70 CRI
- Cartridge assembly is available in various lighting distributions using TIR designed acrylic optical lenses over each LED

Electrical:
- 120V through 277V, 50 Hz to 60 Hz
- Dimming drivers are standard, but must contact factory to request wiring leads for purpose of external dimming controls
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600 VAC at 50°C or higher
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only
- Surge protection - 20kA

Controls/Options:
- Endura is available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the Motion Response system reduces the wattage down to a factory preset level, reducing light level accordingly. When motion is detected, the luminaire returns to full wattage and full light output. Please contact Beacon Products if project requirements vary from the standard configurations
- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night. see Energeni product page for more details www.beaconproducts.com/products/energeni
- In addition, Endura can be specified with **SiteSync™** wireless control system for reduction in energy and maintenance cost while optimizing light quality 24/7. See ordering information or visit for more details: www.hubbell-automation.com/products/sitesync/

Installation:
- Top housing is designed with various bolt patterns for mounting to a recessed, surface or rigid-pendant hung ceiling junction box and rigid stem (provided by others)
- After mounting the top housing to the junction box, the main housing is designed to hang and hinge closed after connecting the male and female quick connectors
- Mounting design permits a simple retrofit to existing parking structure luminaires that utilize surface mount or recessed junction boxes

Finish
- IFS polyester powder-coat electro-statically applied and thermocured.
- IFS finish consists of a five stage iron phosphate chemical pretreatment regimen with a polymer primer sealer, ovendry off, and top coated with a thermoset super TGIC polyester powder coat finish
- The finish meets the AAMA 2604 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds

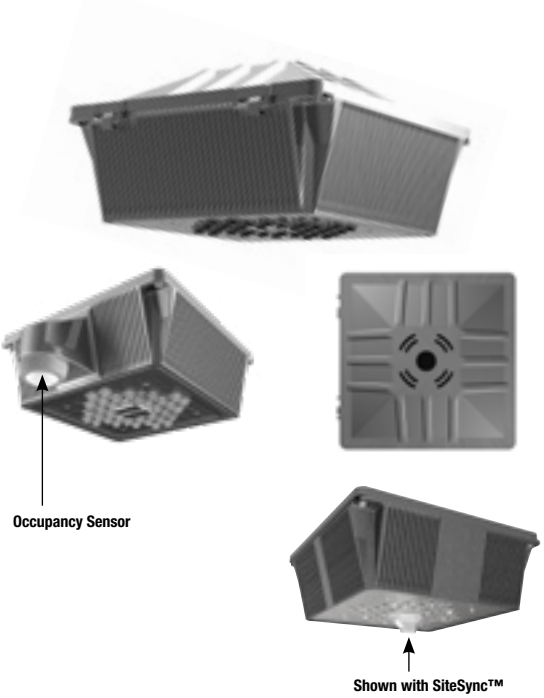
Listings:
- The luminaire shall bear a CSA label and be marked suitable for damp locations (standard). Luminaire may be specified for wet locations.
- This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate Turtle Friendly spec available at: http://www.beaconproducts.com/products/endura

Warranty:
Five year limited warranty for more information visit: www.hubbelllighting.com/resources/warranty

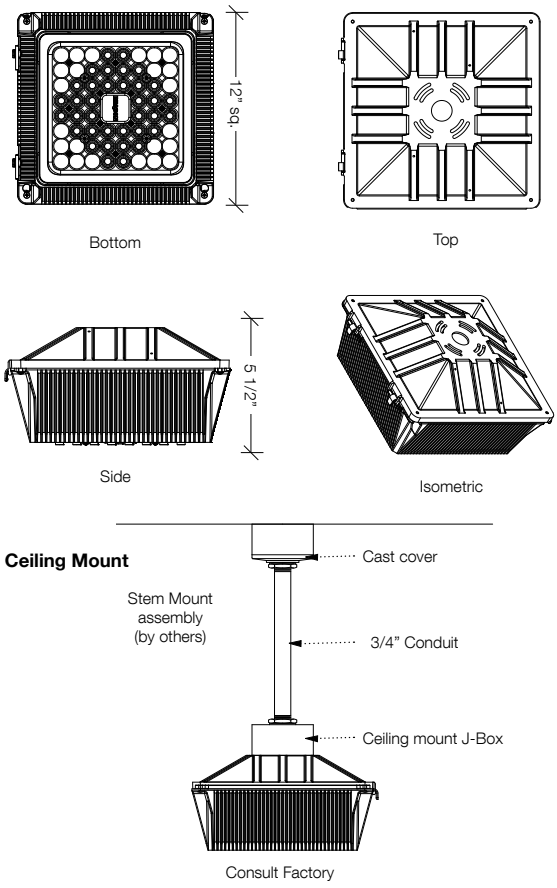
CERTIFICATIONS/LISTINGS

C SP US

PRODUCT IMAGE(S)



DIMENSIONS



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HUBBELL Lighting

ORDERING INFORMATION ORDERING EXAMPLE: EDR/36L-80/5K7/5W/UNV/GENI-02/BL

SERIES		ENGINE-WATTS		CCT/CRI[11]	
EDR	Endura	24L-27	27 Watts - LED array	3K7	3000K, 70 CRI
		24L-55	55 Watts - LED array	4K7	4000K, 70 CRI
		36L-80	80 Watts - LED array	5K7	5000K , 70 CRI (std.)
		48L-110	110 Watts - LED array		

OPTICS	
5R	Type V, rectangular
5W	Type V, wide
5QM	Type V, square medium
5QN	Type V, square narrow
5QW	Type V, square wide

HIGHER MOUNTING APPLICATIONS	
2X2	Type V Concentrated Spot
4X4	Type V Concentrated Narrow
5X5	Type V Concentrated Medium
5X3	Type V Concentrated Rectangular

VOLTAGE	
UNV	120-277V
120	120V
208	208V
240	240V
277	277V
347	347V
480	480V

ELECTRICAL OPTIONS	
PEC-120	photocell, button 120V
PEC-208	photocell, button 208V
PEC-240	photocell, button 240V
PEC-277	photocell, button 277V
2PF[1,2,8]	Dual power feed
BPC[4,8]	Cold weather battery pack
BP[4,8]	0° C battery pack

CONTROL OPTIONS	
GENI-XX[5,9]	Energeni
SWP[6,9]	SiteSync Wireless Pre-Commission
SWPM[6,7,9]	SiteSync Wireless Pre-Commission w/ Motion Detection

FINISH	
BL	Black textured
DB	Dark bronze
GYS	Light gray smooth
PS	Platinum silver
WH	White textured

SENSOR OPTIONS	
MOB[3,7,9]	Occupancy Sensor (33% or 50% dimming
OCS[9,10]	Occupancy Sensor (on/off)

[1] Not available on 24L-27
[2] Not available @347V or 480V input
[3] Not available on 48L-110
[4] 36L-80 only
[5] When ordering Energeni, specify the routine setting code (example GENI-04). See Energeni brochure and instructions for setting table and options. Not available with sensor options.
[6] Must specify group and zone information at time or order. See www.hubbell-automation.com/products/sitesync/ for further details.
[7] Specify time delay; dimming level and mounting height.
[8] Not available with SWP or SWPM control options
[9] Not available with other control or sensor options
[10] Specify mounting height
[11] This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: http://cdn.beaconproducts.com/content/products/specs/specs_files/Endura_turtle_LED_spec_sheet.pdf

PRECOMMISSIONED SITESYNC ORDERING INFORMATION: When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit www.hubbell-automation.com/products/sitesync/ or contact Hubbell Lighting tech support at (800) 345-4928.

SiteSync fixtures with occupancy sensor (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: EDR/24L-55/4K7/5W/UNV/SWP/BL — SiteSync only
EDR/24L-55/4K7/5W/UNV/SWPM-20F/BL — SiteSync with Motion Control

MOB ORDERING INFORMATION: When ordering a fixture with a dimming occupancy sensor (MOB), please specify the appropriate information. These settings are specified in the ordering as shown in the example below.

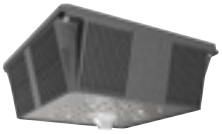
EDR/24L-55/4K7/5R/UNV/MOB - 1 to 30 min. - 33% or 50% - ?? / BL

High to Dim Delay | Low Level | Mounting Height (ft.)

Accessories and Services (Ordered Separately)

Catalog Number	Description
SWUSB*	SiteSync interface software loaded on USB flash drive for use with owner supplied PC (Windows based only). Includes SiteSync license, software and USB radio bridge node.
SWTAB*	Windows tablet and SiteSync interface software. Includes tablet with preloaded software, SiteSync license and USB radio bridge node.
SWBRG+	SiteSync USB radio bridge node only. Order if a replacement is required or if an extra bridge node is requested.

* When ordering SiteSync at least one of these two interface options must be ordered per project.
+ If needed, an additional Bridge Node can be ordered.



SiteSync Lighting Control is available from our most popular brands in a broad range of award-winning product families.

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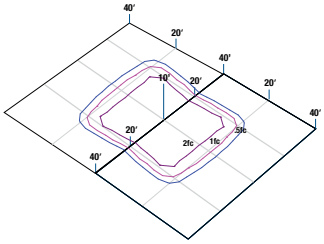
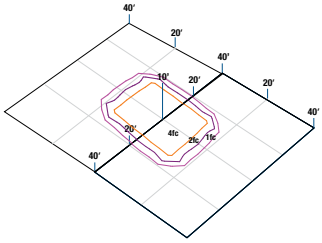
PHOTOMETRICS

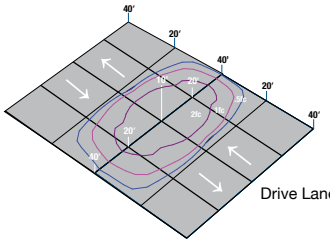
Type V Square Medium
EDR-48L-110-5QM



Type V Square Narrow
EDR-48L-110-5QN



Type V Rectangular
EDR-48L-110-5R



Drive Lane Direction

PERFORMANCE DATA

				5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
# LED'S	DRIVE CURRENT (MILLIAMPS)	SYSTEM WATTS	DISTRIBUTION TYPE	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G
24	350mA	27W	2X2	3567	129	N/A	N/A	N/A	3640	131	N/A	N/A	N/A	3278	118	N/A	N/A	N/A
			4X4	3490	126	N/A	N/A	N/A	3561	129	N/A	N/A	N/A	3207	116	N/A	N/A	N/A
			5QM	3275	118	2	0	0	3341	121	2	0	0	3010	109	2	0	0
			5QN	3072	111	2	1	2	3135	113	2	1	2	2824	102	2	1	2
			5R	3330	120	2	1	2	3398	123	2	1	2	3061	110	2	1	2
			5W	3309	119	2	1	1	3376	122	2	1	1	3041	110	2	1	1
			5X3	3300	119	N/A	N/A	N/A	3367	122	N/A	N/A	N/A	3033	109	N/A	N/A	N/A
			5X5	3373	122	N/A	N/A	N/A	3441	124	N/A	N/A	N/A	3100	112	N/A	N/A	N/A
24	700mA	55W	2X2	6611	121	N/A	N/A	N/A	3746	124	N/A	N/A	N/A	6076	111	N/A	N/A	N/A
			4X4	6468	119	N/A	N/A	N/A	6600	121	N/A	N/A	N/A	5944	109	N/A	N/A	N/A
			5QM	6069	111	2	0	1	6193	114	2	0	1	5578	102	2	0	1
			5QN	5694	104	3	1	2	5810	107	3	1	2	5233	96	3	1	2
			5R	6172	113	3	1	3	6298	116	3	1	3	5673	104	3	1	3
			5W	6132	113	3	1	1	6257	115	3	1	1	5636	103	3	1	1
			5X3	6115	112	N/A	N/A	N/A	6240	114	N/A	N/A	N/A	5621	103	N/A	N/A	N/A
			5X5	6251	115	N/A	N/A	N/A	6378	117	N/A	N/A	N/A	5745	105	N/A	N/A	N/A
36	700mA	80W	2X2	9916	121	N/A	N/A	N/A	10119	124	N/A	N/A	N/A	9114	112	N/A	N/A	N/A
			4X4	9702	119	N/A	N/A	N/A	9900	121	N/A	N/A	N/A	8917	109	N/A	N/A	N/A
			5QM	9103	111	3	0	1	9289	114	3	0	1	8367	102	3	0	1
			5QN	8541	105	4	1	3	8715	107	4	1	3	7850	96	4	1	3
			5R	9258	113	3	2	3	9447	116	3	2	3	8509	104	3	2	3
			5W	9198	113	3	2	2	9386	115	3	2	2	8454	103	3	2	2
			5X3	9173	112	N/A	N/A	N/A	9360	115	N/A	N/A	N/A	8431	103	N/A	N/A	N/A
			5X5	9376	115	N/A	N/A	N/A	9568	117	N/A	N/A	N/A	8617	105	N/A	N/A	N/A
48	700mA	110W	2X2	13222	121	N/A	N/A	N/A	13492	123	N/A	N/A	N/A	12152	111	N/A	N/A	N/A
			4X4	12936	118	N/A	N/A	N/A	13200	120	N/A	N/A	N/A	11889	108	N/A	N/A	N/A
			5QM	12138	110	3	0	2	12386	113	3	0	2	11156	102	3	0	2
			5QN	11388	104	4	2	3	11620	107	4	2	3	10466	96	4	2	3
			5R	12344	113	3	2	3	12596	116	3	2	3	11345	104	3	2	3
			5W	12264	112	4	2	2	12514	115	4	2	2	11272	103	4	2	2
			5X3	12231	112	N/A	N/A	N/A	12480	114	N/A	N/A	N/A	11241	103	N/A	N/A	N/A
			5X5	12501	114	N/A	N/A	N/A	12757	117	N/A	N/A	N/A	11490	105	N/A	N/A	N/A

[1]Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-user environment and application.

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HUBBELL Lighting

ELECTRICAL DATA

# OF LEDS	NUMBER OF DRIVERS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	SYSTEM POWER (w)	CURRENT (Amps)
24	1	350mA	120	27	0.2
			277		0.1
			347		0.1
			480		0.1
24	2	700mA	120	55	0.5
			277		0.2
			347		0.2
			480		0.1
36	1	700mA	120	80	0.7
			277		0.3
			347		0.2
			480		0.2
48	1	700mA	120	110	0.9
			277		0.4
			347		0.3
			480		0.2
60	1	700mA	120	136	1.1
			277		0.5
			347		0.4
			480		0.3

AMBIENT TEMPERATURE		LUMEN MULTIPLIER
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	77°F	1.00

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).

PROJECTED LUMEN MAINTENANCE

AMBIENT TEMP.	0	25,000	50,000	[1]TM-21-11 60,000	100,000	Calculated L70 (HOURS)
25°C / 77°C	1.00	0.97	0.95	0.94	0.91	434,000

[1] Projected per IESNA TM-21-11
Data references the extrapolated performance projections for the base model in a 25°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

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VIPER S OPTICS STRIKE

SMALL VIPER LUMINAIRE

Cat.#	
Job	Type

BEACON design . performance . technology

Approvals

SPECIFICATIONS

Intended Use:

The Beacon Viper luminaire is available with a wide choice of different LED Wattage configurations and optical distributions designed to replace HID lighting up to 400W MH or HPS.

Construction:

- Manufactured with die cast aluminum.
- Coated with a polyester finish that meets ASTM B117 corrosion test requirements and ASTM D522 cracking and loss of adhesion test requirements.
- External hardware is corrosion resistant.
- One piece optical cartridge system consisting of an LED engine, LED lamps, optics, gasket and stainless steel bezel.
- Cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one piece optical system.
- Two-piece silicone and micro-cellular polyurethane foam gasket ensures a weather-proof seal around each individual LED.

Electrical:

- 100V through 277V, 50 Hz to 60 Hz (UNV), or 347V or 480V input.
- Power factor is ≥.90 at full load.
- Dimming drivers are standard, but must contact factory to request wiring leads for purpose of external dimming controls.
- Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is certified by UL for use at 600VAC at 90°C or higher.
- Plug disconnects are certified by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only.
- Fixture electrical compartment shall contain all LED driver components and shall be provided with a push-button terminal block for AC power connections.
- Surge protection - 20kA.
- Optional 7-pin ANSI C136.41-2013 twist-lock photo control receptacle available. Compatible with ANSI C136.41 external wireless control devices.
- Lifeshield™ Circuit - protects luminaire from excessive temperature. The device shall activate at a specific, factory-preset temperature, and progressively reduce power over a finite temperature range. Operation shall be smooth and undetectable to the eye. Thermal circuit is designed to "fail on", allowing the luminaire to revert to full power in the event of an interruption of its power supply, or faulty wiring connection to the drivers. The device shall be able to co-exist with other 0-10V control devices (occupancy sensors, external dimmers, etc.).

Controls/Options:

- Available with an optional passive infrared (PIR) motion sensor capable of detecting motion 360° around the luminaire. When no motion is detected for the specified time, the Motion Response system reduces the wattage to factory preset level, reducing the light level accordingly. When motion is detected by the PIR sensor, the luminaire returns to full wattage and full light output. Please contact Beacon Products if project requirements vary from standard configuration.
- Available with Energeni for optional set dimming, timed dimming with simple delay, or timed dimming based on time of night (see www.beaconproducts.com/products/energeni).
- In addition, Viper can be specified with **SiteSync™** wireless control system for reduction in energy and maintenance costs while optimizing light quality 24/7. For more details, see ordering information or visit: www.hubbelllighting.com/sitesync

Installation:

- Mounting options for horizontal arm, vertical tenon or traditional arm mounting available. Mounting hardware included.

Finish:

- IFS polyester powder-coat electrostatically applied and thermocured. IFS finish consists of a five stage pretreatment regimen with a polymer primer sealer and top coated with a thermoset super TGIC polyester powder coat finish.
- The finish meets the AAMA 2604 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pounds.

Certifications/Ratings:

- DesignLights Consortium (DLC) qualified, consult DLC website for more details: http://www.designlights.org/QPL
- Certified to UL 1598, UL 8750 and CSA C22.2 No.250.0
- IDA approved
- This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: http://www.beaconproducts.com/products/vipersmall

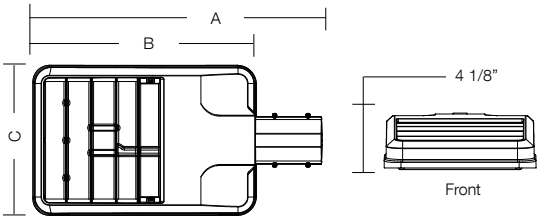
Warranty:

Five year limited warranty for more information visit: www.hubbelllighting.com/resources/warranty

PRODUCT IMAGE(S)

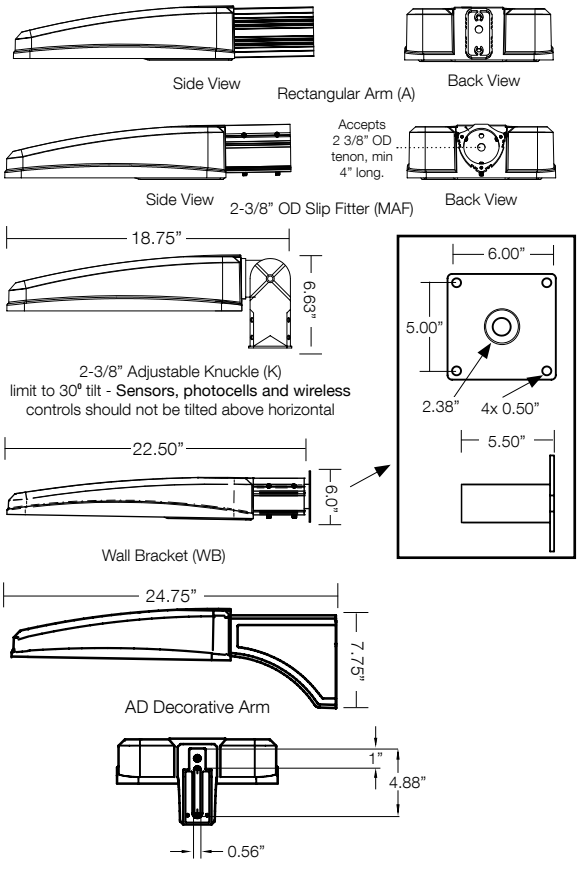


DIMENSIONS



A	B	C	Weight:	EPA
21.75" (552 mm)	16.75" (425 mm)	11.25" (286 mm)	15.0 lbs (6.8 kg)	.67 ft²

MOUNTING OPTIONS



CERTIFICATIONS/LISTINGS

C SA US

ida

*3000K and warmer CCTs only

DLC QPL LISTED

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HUBBELL Lighting

ORDERING INFORMATION ORDERING EXAMPLE: VPS/24L-55/4K7/4W/UNV/A/DBT/7PR-TL/GENI-04/BC

VPS										

SERIES
- **VPS** Viper

LED ENGINE
- **24L-55** 55W, LED array
- **36L-65** 65W, LED array
- **36L-80** 80W, LED array
- **48L-110** 110W, LED array
- **60L-136** 136W, LED array

CCT/CRI[7]
- **3K7** 3000K, 70 CRI
- **4K7** 4000K, 70 CRI
- **5K7** 5000K, 70 CRI

DISTRIBUTION
- **FR** Type 1/Front Row
- **2** Type 2
- **3** Type 3
- **4** Type 4
- **4W** Type 4 Wide
- **5QM** Type 5QM
- **5R** Type 5R (rectangular)
- **5W** Type 5W (round wide)
- **TC** Tennis Court

ROTATION
- Leave blank for no rotation
- **L[5]** Optic rotation left
- **R[5]** Optic rotation right

VOLTAGE
- **UNV** 120-277V
- **120** 120V
- **208** 208V
- **240** 240V
- **277** 277V
- **347** 347V
- **480** 480V

COLOR
- **BL** Black Textured
- **DB** Dark Bronze Textured
- **GYS** Light Gray Smooth
- **PS** Platinum Silver Smooth
- **WH** White Textured
- **CC** Custom Color

OPTIONS
- **F** Fusing
- **BSP** Bird Spikes
- **BC** BacksheidId (available for FR, 2, 3, 4, 4W Optics)

MOUNTING
- **A** Rectangular Arm (formerly RA) for square or round pole
- **MAF** Mast Arm Fitter (formerly SF2) for 2-3/8" OD horizontal arm
- **K** Knuckle (formerly PK2) limit to 45° tilt or 2-3/8" OD horizontal arm or vertical tenon
- **WB** Wall Bracket
- **AD** Universal Arm for square pole
- **AD3** Universal Arm for 2.4"-4.1" round pole
- **AD4** Universal Arm for 4.2" -5.3" round pole
- **AD5** Universal Arm for 5.5" -5.9" round pole
- **AD6** Universal Arm for 6.0"-6.5" round pole

CONTROL OPTIONS
- **7PR** 7-Pin Receptacle only (shorting cap, photo control, or wireless control provided by others)
- **7PR-SC** 7-Pin Receptacle w/Shorting Cap
- **7PR-TL** 7-Pin Receptacle w/Twist Lock photo control
- **SCP/_F[1,2,6]** Programmable Occupancy Sensor w/ daylight control (120-277 volts only)
- **GENI-XX[3]** ENERGENI
- **SWP[1,4]** SiteSync Pre-Commission
- **SWPM[1,2,4]** SiteSync Pre-Comm w/ Sensor

HOUSE SIDE SHIELD ACCESSORIES
- **HSS/VP-S/90-FB/XXX** 90° shield front or back
- **HSS/VP-S/90-LR/XXX** 90° shield left or right
- **HSS/VP-S/270-FB/XXX** 270° shield front or back
- **HSS/VP-S/270-LR/XXX** 270° shield left or right
- **HSS/VP-S/360/XXX** Full shield

(Replace XXX with notation for desired finish color)
(Refer to page 5 for shield images)

MOUNTING ACCESSORIES
- **VPL-AD-RPA3** 2.4"-4.1" Round Pole Adapter for AD arm
- **VPL-AD-RPA4** 4.2"-5.3" Round Pole Adapter for AD arm
- **VPL-AD-RPA5** 5.5"-5.9" Round Pole Adapter for AD arm
- **VPL-AD-RPA6** 6.0"-6.5" Round Pole Adapter for AD arm

[1] Not available with other wireless control or sensor options
[2] Specify mounting height; 8=8' or less, 40=9' to 40'
[3] Specify routine setting code (example GENI-04). See ENERGENI brochure and instructions for setting table and options. Not available with sensor or SiteSync options.
[4] Specify group and zone at time of order. See www.hubbelllighting.com/sitesync for further details. Order at least one SiteSync interface Accessory SWUSB or SWTAB. Each option contains SiteSync License, GUI, and Bridge Node
[5] Only available with 1A, 2, 3, 4, 4W and 5R distributions
[6] Order at least one SCP-REMOTE per project location to program and control the occupancy sensor.
[7] This product is approved by the Florida Fish and Wildlife Conservation Commission. Separate spec available at: http://cdn.beaconproducts.com/content/products/specs/specs_files/Viper_Small_LED_turtle_spec_sheet.pdf

PRECOMMISSIONED SITESYNC ORDERING INFORMATION: When ordering a fixture with the SiteSync lighting control option, additional information will be required to complete the order. The SiteSync Commissioning Form or alternate schedule information must be completed. This form includes Project location, Group information, and Operating schedules. For more detailed information please visit www.hubbell-automation.com/products/sitesync/ or contact Hubbell Lighting tech support at (800) 345-4928.

SiteSync fixtures with Motion control (SWPM) require the mounting height of the fixture for selection of the lens.

Examples: VPS/24L-55/4K7/3/UNV/A/DBT/SWP/ SiteSync only
VPS/24L-55/4K7/3/UNV/A/DBT/SWPM-40F/ SiteSync with Motion Control

Accessories and Services (Ordered Separately)

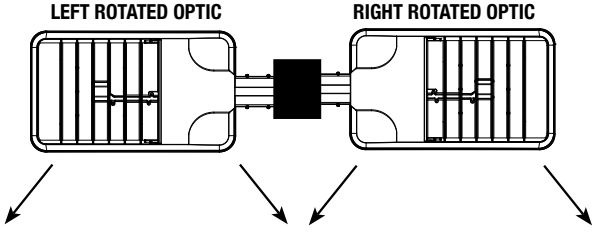
Catalog Number	Description
SWUSB*	SiteSync interface software loaded on USB flash drive for use with owner supplied PC (Windows based only). Includes SiteSync license, software and USB radio bridge node
SWTAB*	Windows tablet and SiteSync interface software. Includes tablet with preloaded software, SiteSync license and USB radio bridge node.
SWBRG	SiteSync USB radio bridge node only. Order if a replacement is required or if an extra bridge node is requested.
SCP-REMOTE	Remote Control for SCP/_F option. Order at least one per project to program and control
SW7PR+	SiteSync 7 Pin on fixture module On/Off/Dim, Daylight Sensor 120-480VAC

* When ordering SiteSync at least one of these two interface options must be ordered per project.
+ Available as a SiteSync retrofit solution for fixtures with an existing 7pin receptacle.

Hubbell Control Solutions - Accessories (sold separately)

Catalog Number	Description	HCS System
NXOFM-1R1D-UNV	On-fixture Module (7-pin), On / Off / Dim, Daylight Sensor with HubbNET Radio and Bluetooth® Radio, 120-480VAC	NX Distributed Intelligence™
WIR-RME-L	On-fixture Module (7-pin or 5-pin), On / Off / Dim, Daylight Sensor with wiSCAPE Radio, 110-480VAC	wiSCAPE® Lighting Control

For additional information related to these accessories please visit www.hubbellcontrolsolutions.com. Options provided for use with integrated sensor, please view specification sheet ordering information table for details.



SiteSync 7-Pin Module


SW7PR

- SiteSync features in a new form
- Available as an accessory for new construction or retrofit applications (with existing 7-Pin receptacle)
- Does no interface with occupancy sensors

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PERFORMANCE DATA

# LED'S	DRIVE CURRENT (MILLIAMPS)	SYSTEM WATTS	DISTRIBUTION TYPE	5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
				LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G
24	700 mA	55W	FR	6357	118	1	0	1	6486	120	1	0	1	5804	107	1	0	1
			2	6132	114	1	0	1	6257	116	1	0	2	5599	104	1	0	1
			3	6015	111	1	0	2	6137	114	1	0	2	5492	102	1	0	2
			4	5921	110	1	0	2	6034	112	1	0	2	5400	100	1	0	2
			4W	5805	108	1	0	2	5921	110	1	0	2	5282	98	1	0	2
			5QM	6022	112	2	0	1	6145	114	2	0	1	5499	102	2	0	1
			5R	6063	112	3	0	3	6187	115	3	0	3	5536	103	3	0	3
			5W	5908	109	3	0	1	6028	112	3	0	1	5908	102	3	0	1
			TC	6183	115	1	0	1	6309	118	1	0	1	5645	105	1	0	1
36	560 mA	65W	FR	7864	121	1	0	1	8041	124	1	0	1	7189	111	1	0	1
			2	7586	117	1	0	2	7757	119	1	0	2	6934	107	1	0	2
			3	7441	114	1	0	2	7609	117	1	0	2	6802	105	1	0	2
			4	7317	110	1	0	2	7482	112	1	0	2	6688	100	1	0	2
			4W	7325	113	1	0	2	7490	115	1	0	2	6696	103	1	0	2
			5QM	7450	115	3	0	1	7618	117	3	0	1	6810	105	3	0	1
			5R	7501	115	3	0	3	7670	118	3	0	3	6857	105	3	0	3
			5W	7309	112	3	0	2	7473	115	3	0	2	6681	103	3	0	1
36	700 mA	80W	FR	9535	118	1	0	1	9730	120	1	0	1	8706	107	1	0	1
			2	9197	114	1	0	2	9385	116	1	0	2	8398	104	1	0	2
			3	9022	111	1	0	2	9206	114	1	0	2	8238	102	1	0	2
			4	8871	110	1	0	2	9052	112	1	0	2	8100	100	1	0	2
			4W	8707	108	1	0	2	8881	110	1	0	2	7923	98	1	0	2
			5QM	9033	112	3	0	1	9217	114	3	0	1	8248	102	3	0	1
			5R	9095	112	3	0	3	9280	115	3	0	3	8304	103	3	0	3
			5W	8861	109	3	0	2	9043	112	3	0	2	8092	100	3	0	2
			TC	9275	115	1	0	1	9464	118	1	0	1	8468	105	1	0	1
48	700 mA	110W	FR	12713	118	1	0	1	12973	120	2	0	1	11608	107	1	0	1
			2	12263	114	2	0	2	12513	116	2	0	2	11197	104	2	0	2
			3	12029	111	2	0	2	11275	114	2	0	2	10984	102	1	0	2
			4	11828	110	1	0	3	12069	112	1	0	3	10800	100	1	0	2
			4W	11609	108	1	0	3	11841	110	1	0	3	10564	98	1	0	3
			5QM	12044	112	3	0	2	12290	114	3	0	2	10997	102	3	0	1
			5R	12126	112	3	0	3	12374	115	3	0	3	11072	103	3	0	3
			5W	12126	109	4	0	2	12057	112	4	0	2	10789	100	4	0	2
			TC	12366	115	1	0	2	12619	118	1	0	2	11290	105	1	0	2
60	700 mA	136W	FR	15891	117	2	0	2	16216	120	2	0	2	14511	107	2	0	1
			2	15329	113	2	0	2	15642	116	2	0	2	13997	103	2	0	2
			3	15037	111	2	0	3	15344	113	2	0	3	13730	101	2	0	3
			4	14784	109	1	0	3	15086	111	1	0	3	13500	100	1	0	3
			4W	14511	108	2	0	4	14802	110	2	0	4	13205	98	2	0	3
			5QM	15055	111	3	0	2	15362	114	3	0	2	13747	102	3	0	2
			5R	15158	112	4	0	4	15469	114	4	0	4	13841	102	4	0	4
			5W	14781	109	4	0	2	15083	111	4	0	2	13495	100	4	0	2
			TC	15458	115	1	0	2	15834	118	1	0	2	14113	105	1	0	2

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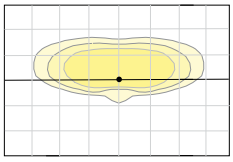
PHOTOMETRICS

Type FR - Front Row/Auto Optic



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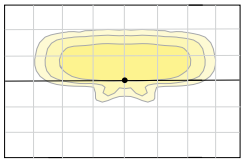

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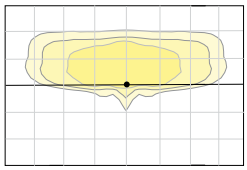

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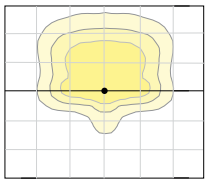
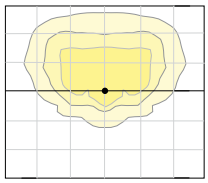


Type 4W



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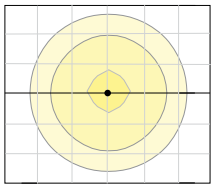

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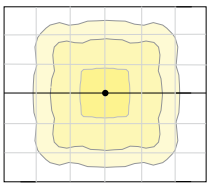
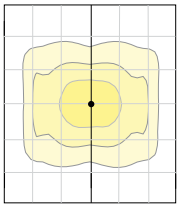


Type 5R



[1]Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown. Actual performance may differ as a result of end-use environment and application.

ELECTRICAL DATA

# OF LEDS	NUMBER OF DRIVERS	DRIVE CURRENT (mA)	INPUT VOLTAGE (V)	SYSTEM POWER (w)	CURRENT (Amps)
24	2	700 mA	120	55	0.5
			277		0.2
			347		0.2
			480		0.1
36	1	560 mA	120	65	0.65
			277		0.28
			347		0.22
			480		0.16
		700 mA	120	80	0.7
			277		0.3
			347		0.2
			480		0.2
48	1	700 mA	120	110	0.9
			277		0.4
			347		0.3
			480		0.2
60	1	700 mA	120	136	1.1
			277		0.5
			347		0.4
			480		0.3

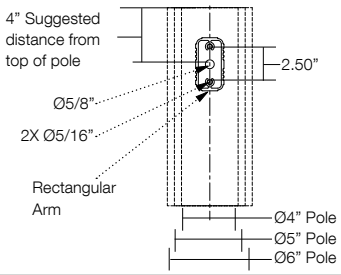
PROJECTED LUMEN MAINTENANCE

AMBIENT TEMP.	0	25,000	50,000	[1]TM-21-11 60,000	100,000	Calculated L70 (HOURS)
25°C / 77°C	1.00	0.97	0.95	0.95	0.92	>377,000

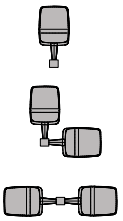
[1] Projected per IESNA TM-21-11
Data references the extrapolated performance projections for the base model in a 25°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.

DRILL PATTERN

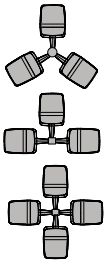
RECTANGULAR ARM (A)
Compatible with Pole drill pattern B4



EPA



Config.	EPA
1	.67
2 @ 90°	1.06
2 @ 180°	1.34



Config.	EPA
3 @ 120°	1.68
3 @ 90°	1.73
4 @ 90°	2.12

TENON TOP POLE BRACKET ACCESSORIES (Order Separately)

(2 3/8" OD tenon)

Catalog Number	Description
SETAVP-XX	Square tenon adapter (4 at 90º) for A - Rectangular Arm mounting option only
RETAVP-XX	Round tenon adapter (4 at 90º) for A - Rectangular Arm mounting option only
TETAVP-XX	Hexagonal tenon adapter (4 at 90º) for A - Rectangular Arm mounting option only
SETA2XX	Square tenon adapter (4 at 90º) for AD - Universal Arm mounting option only
RETA2XX	Round tenon adapter (4 at 90º) for AD3 - Universal Arm mounting option only
TETA2XX	Hexagonal tenon adapter (3 at 120º) for AD - Universal Arm mounting option only

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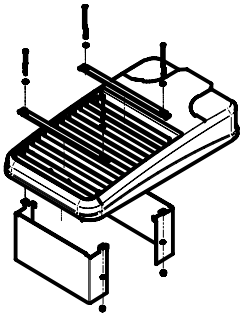
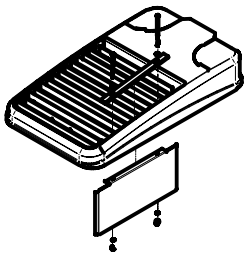
HUBBELL Lighting

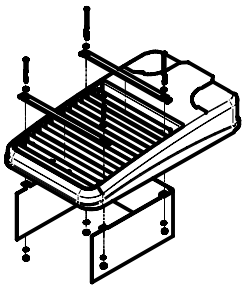
HOUSE SIDE SHIELD FIELD INSTALL ACCESSORIES



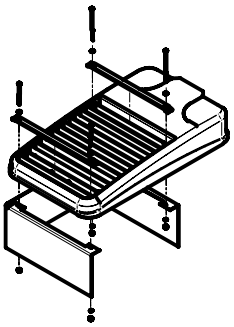
HSS/VP-S/90-FB/XXX
90° shield front or back
(2 shields shown)



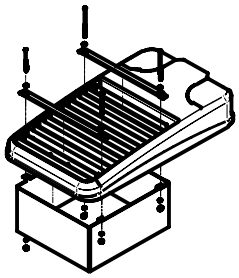
HSS/VP-S/90-LR/XXX
90° shield left or right
(1 shield shown in left orientation)



HSS/VP-S/270-FB/XXX
270° shield front or back
(1 shield shown in back orientation)

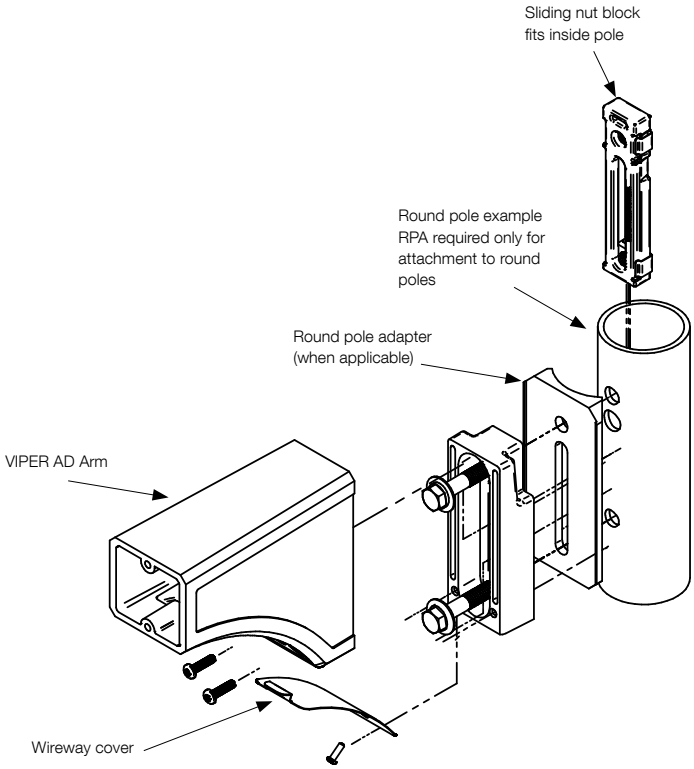


HSS/VP-S/270-LR/XXX
270° shield left or right
(1 shield shown in right orientation)

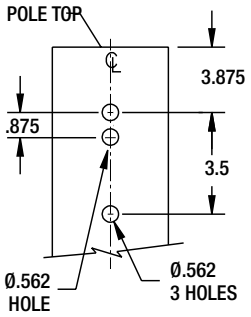


HSS/VP-S/360/XXX
Full shield (1 shield shown)

AD ARM MOUNTING INSTRUCTIONS



DECORATIVE ARM (AD)
Compatible with pole drill pattern S2



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GEOPAK SERIES SIZE 1 LED

Architectural Wallpack

TRP1/RDI1/QSP1

NEW

Cat.#	
Job	Type

HUBBELL Outdoor Lighting

Approvals

SPECIFICATIONS

APPLICATIONS

- Small sized architectural wallpacks in three stylish shapes with molded contours to accentuate building architecture. Provides excellent illumination in energy-saving LED systems.
- Back box accessory available for surface conduit application.

Construction:

- Housing is made from die-cast aluminum with a hinged back-plate for ease of installation and maintenance.
- The LED bezel and trim-plate are made of stainless steel.
- Five powder coat standard finishes, plus custom color options.
- Wet Location Listed to UL924 and UL1598 Standard.

LED:

- 12 high power LEDs delivering up to 3,000 lumens.
- Up to 118 lumens per watt
- Type II, III and IV distributions for a wide variety of applications.
- Zero uplight (U0), dark sky, neighbor friendly

Electrical:

- 120-277 operation, 50/60Hz
- 0-10V dimming driver standard
- 10kA surge protector
- Photocell and occupancy sensor options available for complete on/off and dimming control

Battery Backup:

- Intergral Battery Backup provides emergency lighting for the required 90 minute path of egress.
- Includes a long-life Lithium Iron Phosphate battery with optional battery heater for cold temperature application.
- Utilizes 4 LEDs in emergency mode with 657 lumens. Each of the 4 LEDs in emergency are designed to function independently in the unlikely event of a single LED malfunction
- Spectron® self-testing/self-diagnostic electronics are included standard
- Independent dedicated driver and LED array for battery/emergency mode operation.

Installation:

- Universal plate for mounting to standard 3 1/2" and 4" square electrical boxes. All connections are made from connections at the rear of the unit.
- Optional back-box accessory available for surface conduit application. See BB-Geo accessories.

Listings:

- UL 1598 listed for use in wet locations
- Drivers IP66 and RoHS compliant
- DesignLights Consortium® (DLC) qualified. Please refer to the DLC website for specific product qualifications at www.designlights.org

Warranty:

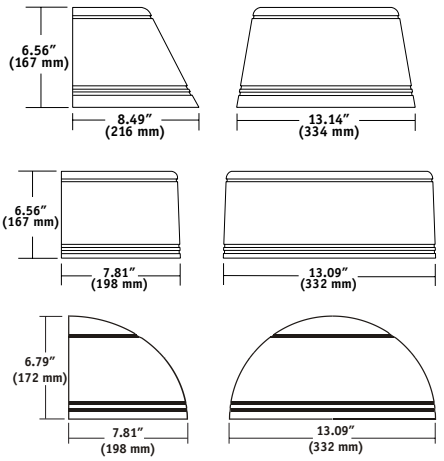
- For more information visit:

http://www.hubbelloutdoor.com/resources/warranty/

PRODUCT IMAGE(S)



DIMENSIONS



SHIPPING INFORMATION

Catalog Number	Weight (lbs)	Carton Dimensions		
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)
TRP1	11.5	17.0	9.9	10.0
RDI1	11.5	18.0	11.0	9.25
QSP1	10.5	17.0	9.6	10.5

CERTIFICATIONS/LISTINGS

C US

*3000K and warmer CCTs only

ORDERING INFORMATION

ORDERING EXAMPLE: TRP-12L-20-4K-3-1-BL-SCP-EH

[ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

HOUSING	VERSION	WATTAGE	CCT/CRI	DISTRIBUTION	VOLTAGE	FINISH	CONTROL OPTIONS	OPTIONS
TRP1 Trapezoid	**12L** 12 LEDS	**15** 15 watts	**3K7** 3000K, 70CRI	**2** Type II	**U** 120-277	**BL** Black	**PCU** Button Photocell	**F**[4] Fusing (only available with STD fixture configuration, 120-277V only)
RDI1 Radius		**20** 20 watts	**4K7** 4000K, 70CRI	**3** Type III	**1** 120	**DB** Bronze	**SCP**[2,3] Programmable Motion Sensor	**E**[1] Battery Pack (0˚C)
QSP1 Quartersphere		**30** 30 watts	**5K7** 5000K, 70CRI	**4** Type IV	**2** 208	**GR** Gray	**SPECIFY SCP HEIGHT**	**EH**[1] Battery Pack (-30˚C) with heater
					3 240	**PS** Platinum	**8F** Up to 8ft mount height	
					4 277	**WH** White	**20F** Up to 20ft mount height	
						CC Custom		

[1] Voltage specific (120 or 277V only)
[2] Must order minimum of one remote control to program dimming settings, 0-10V fully adjustable dimming with automatic daylight calibration and different time delay settings, 120-277V only
[3] PCU option not applicable, included in sensor
[4] Must specify input voltage (120, 208, 240 or 277)

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ACCESSORIES - Order separately

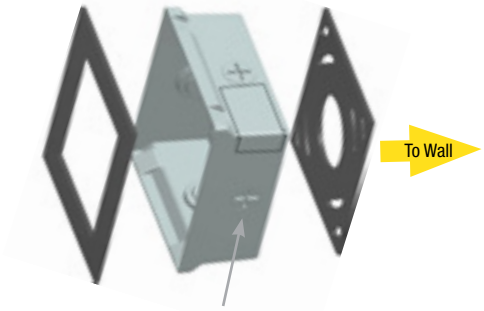
Catalog Number	Description
SCP-REMOTE[2]	Remote control for SCP option. Order at least one per project to program and control.
BB-GEO-XX	Back box with 4 - 1/2" threaded conduit holes, specify finish by replacing "XX" with finish selection, eg. Dark Bronze "DB"

[2] Must order minimum of one remote control to program dimming settings, 0-10V fully adjustable dimming with automatic daylight calibration and different time delay settings, 120V-277V only



BB-GEO-XX – Mounted to luminaire

BB-GEO-XX



PERFORMANCE DATA (AC/Standard Configurations)

				5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
# OF LEDS	DRIVE CURRENT	SYSTEM WATTS	DIST. TYPE	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G	LUMENS	LPW[1]	B	U	G
12	350mA	13.9	2	1635	118	1	1	1	1577	113	1	1	1	1497	108	1	1	1
			3	1613	116	1	0	1	1556	112	1	0	1	1477	106	1	0	1
			4	1607	116	0	0	1	1550	111	0	0	1	1471	106	0	0	1
	500mA	19.9	2	2268	114	1	1	1	2176	109	1	1	1	2077	104	1	1	1
			3	2245	113	1	0	1	2140	108	1	0	1	2049	103	1	0	1
			4	2229	112	0	0	1	2150	108	0	0	1	2041	103	0	0	1
	700mA	28.2	2	2942	104	1	1	1	2885	102	1	1	2	2721	96	1	1	1
			3	2912	103	1	0	1	2836	101	1	0	1	2685	95	1	0	1
			4	2892	103	1	0	1	2789	99	1	0	1	2674	95	1	0	1

Electrical Data

Input Power Consumption

Drive Current (mA)	Input Voltage (V)	System Power (w)	Current (Amps)
350mA	120	13.9	0.12
	277		0.05
500mA	120	19.9	0.17
	277		0.07
700mA	120	28.2	0.24
	277		0.10

Battery backup units consume additional power during charging (maximum 32.2 watts for E, 50.7 watts for EH)

Projected Lumen Maintenance

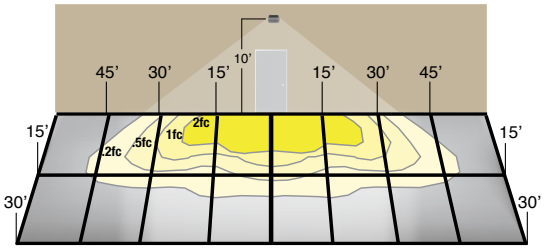
Ambient Temp.	Operating Hours 0	25,000	50,000	TM-21-11[1] 60,000	100,000	L70 (hours)
25°C/77°F	1.00	0.98	0.97	0.95	0.91	>345,000
40°C/104°F	1.00	0.96	0.95	0.92	0.87	>268,000

LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

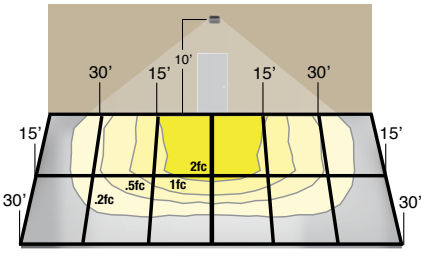
AMBIENT TEMPERATURE		LUMEN MULTIPLIER
0° C	32° F	1.02
10° C	50° F	1.01
20° C	68° F	1.00
25° C	77° F	1.00
30° C	86° F	1.00
40° C	104° F	0.99
50° C	122° F	0.98

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

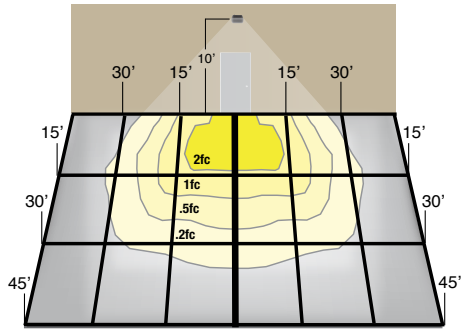
PHOTOMETRIC REPORTS
(30w, 4000K shown)



TYPE II



TYPE III



TYPE IV (Forward throw)

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GeoPak - Battery Back Up

Functional Circuitry: Transient surge protection device on AC input. Upon failure of the normal utility power, an LED driver is automatically activated to power the emergency LEDs. Upon resumption of normal utility power, the LED driver is turned off, and the battery is recharged through a micro-controller based 3-stage charger. The battery is a maintenance-free Lithium Iron Phosphate (LiFePo) type. A low voltage battery disconnect (LVD) feature protects the battery from severe damage during prolonged power failures. Manual testing is available at any time using the push-to-test button. The optional heater features a heating wrap and thermostat to maintain optimal battery temperature during charge or discharge. The GeoPak includes the following features:

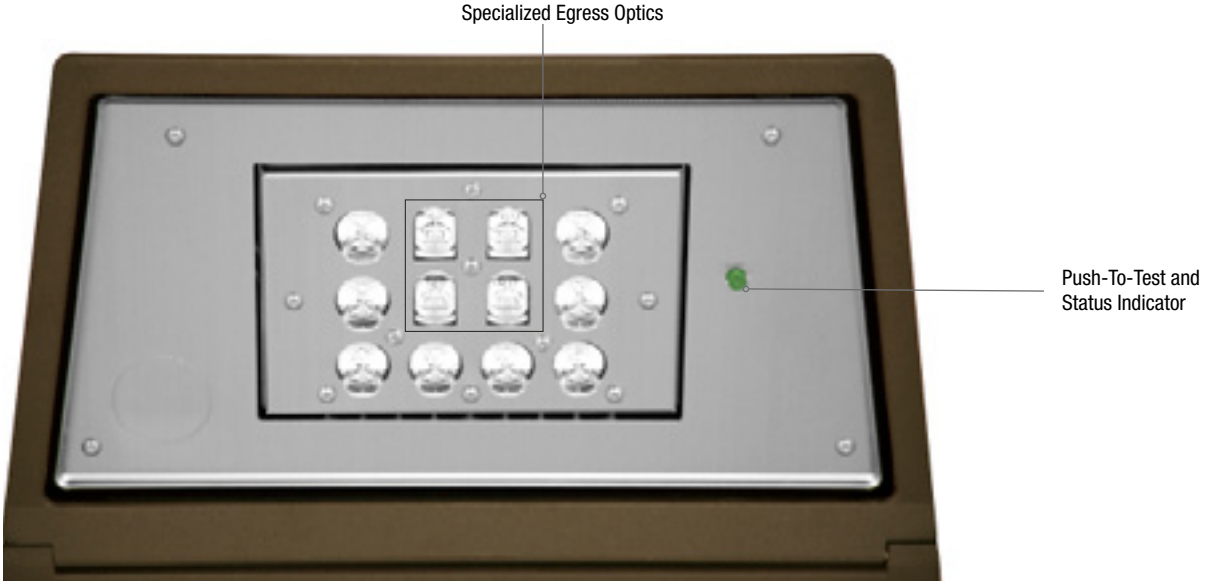
- Battery re-charge within 24 hours
- AC Lock-out circuit
- Self-diagnostics monitors LED status, LED driver circuit, battery capacity and charger function and displays any fault detection by means of a flashing code.
- Self-Test feature runs a 1 minute test once a month and an alternating 30 or 60 minute test once every 6 months. Multi-color LED indicator provides visible fault detection and charging status.
- User initiated 1, or 90-minute system test feature
- 15 minute re-transfer delay
- Automatic unit transfer in brown-out conditions (below 80% of nominal AC input voltage).
- Battery backup units consume 6 watts when charging a dead battery and 2 watts during maintenance charging. EH (units with a heater) consume up to an additional 8 watts when charging if the battery temp is lower than 10°C

Emergency Photometric Performance (1 fc average .1 fc minimum)

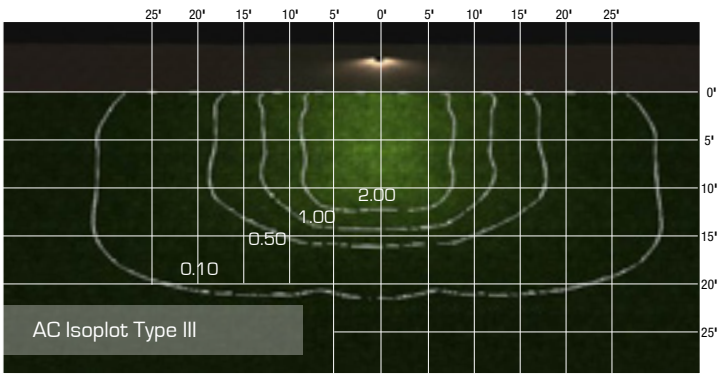
28’ multi-unit spacing at 10’ MH with 0/30/10 reflectances on a 6’ path

26’ x 10’ single unit coverage at 10’ MH with 0/30/10 reflectances

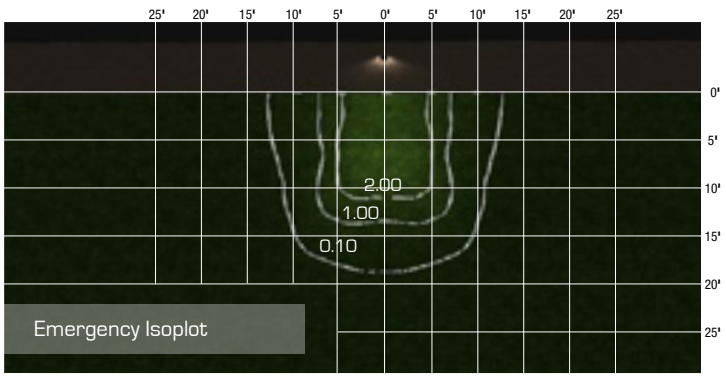
6’ x 19’ forward throw coverage at 10’ MH with 0/30/10 reflectances



Normal Mode



Emergency Mode



Provides Life Safety Code average illuminance of 1.0 fc. Assumes open space with no obstructions.

Diagrams for illustration purposes only, please consult factory for application layout.

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ENVIRONMENTAL AND LANDSCAPE FEATURES

The following statements are provided in accordance with the Section 14-526 of the ordinance.

(b) Environmental Quality Standards

Preservation of Significant Natural Features (14-526 (b) 1), if applicable

- *Trees, plants, habitats listed on State or Federal list of endangered or threatened*
- *High and moderate value waterfowl and wading habitat*
- *Aquifers on Casco Bay Islands*
- *Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains)*
- *Proposed preservation areas and protection measures*
- *Documentation from environmental consultants, determinations from applicable state agencies*

1. *Preservation of Significant Natural Features:*
    - The existing site retains no prominent significant natural features therefore no issue related to the preservation of these features applies.

Landscaping and Landscape Preservation (14-526 (b) 2 a)

- *Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4)*
- *Protection measures of existing vegetation during construction*
- *Protection measures within Shoreland Zone, if applicable*

2. *Landscaping and Landscape Prevention:*
    a. *Landscape Preservation.*

        (i) There are no existing landscape features or elements at the site. A substantial amount of new landscaping will be provided to the site.

        (ii) Not applicable.

        (iii) There is no specific vegetation protection required on the site.

        (iv) The Applicant will request a waiver from this standard.

        (v) Not applicable (not in Shoreland Zone).

Landscaping and Landscape Preservation (14-526 (b) 2 b i)

    a. *Screening and buffering of service areas and between non-residential and residential uses*
    b. *Planting plans with plant schedule and sizes*

2. Landscaping and Landscape Prevention:

b. Site Landscaping:

(i) Landscaped Buffers:

(a) There is an existing loading area at the end of the existing building to remain and this area will remain open. Any trash collection will be within a secure area that will contain solid screening in the form of a fence or wall system.

(b) The development is not subject to zoning setbacks or buffering requirements.

(c) Not applicable.

(d) Not applicable.

Landscaping and Landscape Preservation (14-526 (b) 2 b ii)

Parking Lot Landscaping, if applicable

- *Landscaped islands within parking areas (Technical Manual, Section 4)*

2. Landscaping and Landscape Preservation:

a. Site Landscaping.

(ii) Parking Lot Landscaping:

a) thru d) Parking lot and area landscaping will be provided for on the landscape plans by ALA Landscape Architecture. Landscape renderings are included with this section. A formal Landscape Plan will be submitted to the City.

Street Trees (14-526 (b) 2 b iii)

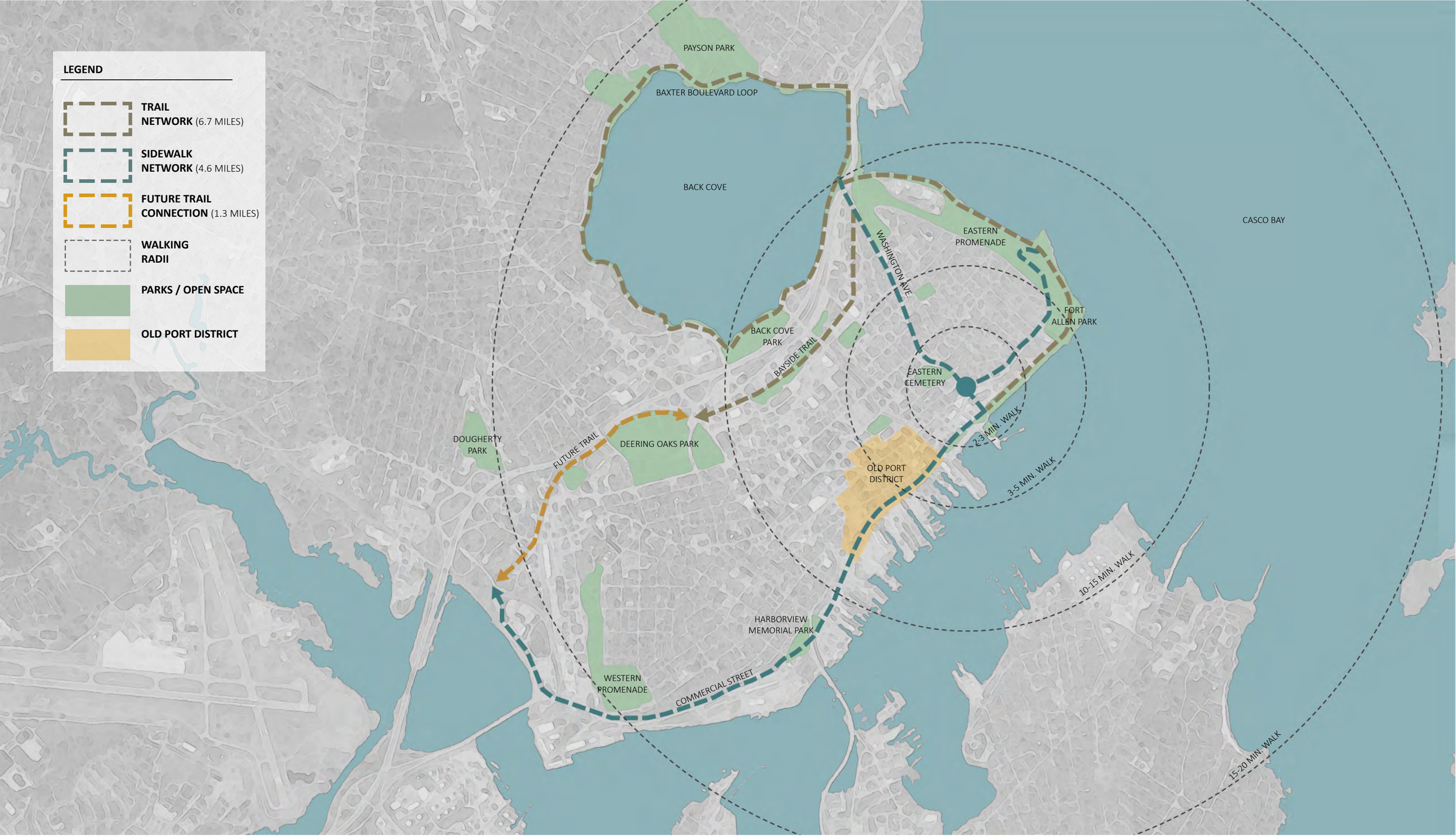
- *Existing Heritage or Feature Trees on site and measures to preserve*
- *Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable*

2. Landscaping and Landscape Preservation:

b. Site Landscaping.

(iii) Street Trees:

(a) The landscape architect will coordinate plantings with the City arborist.



100 FORE STREET | SITE CONTEXT
10.10.2018

ALA
LANDSCAPE ARCHITECTURE + URBAN DESIGN + GRAPHICS
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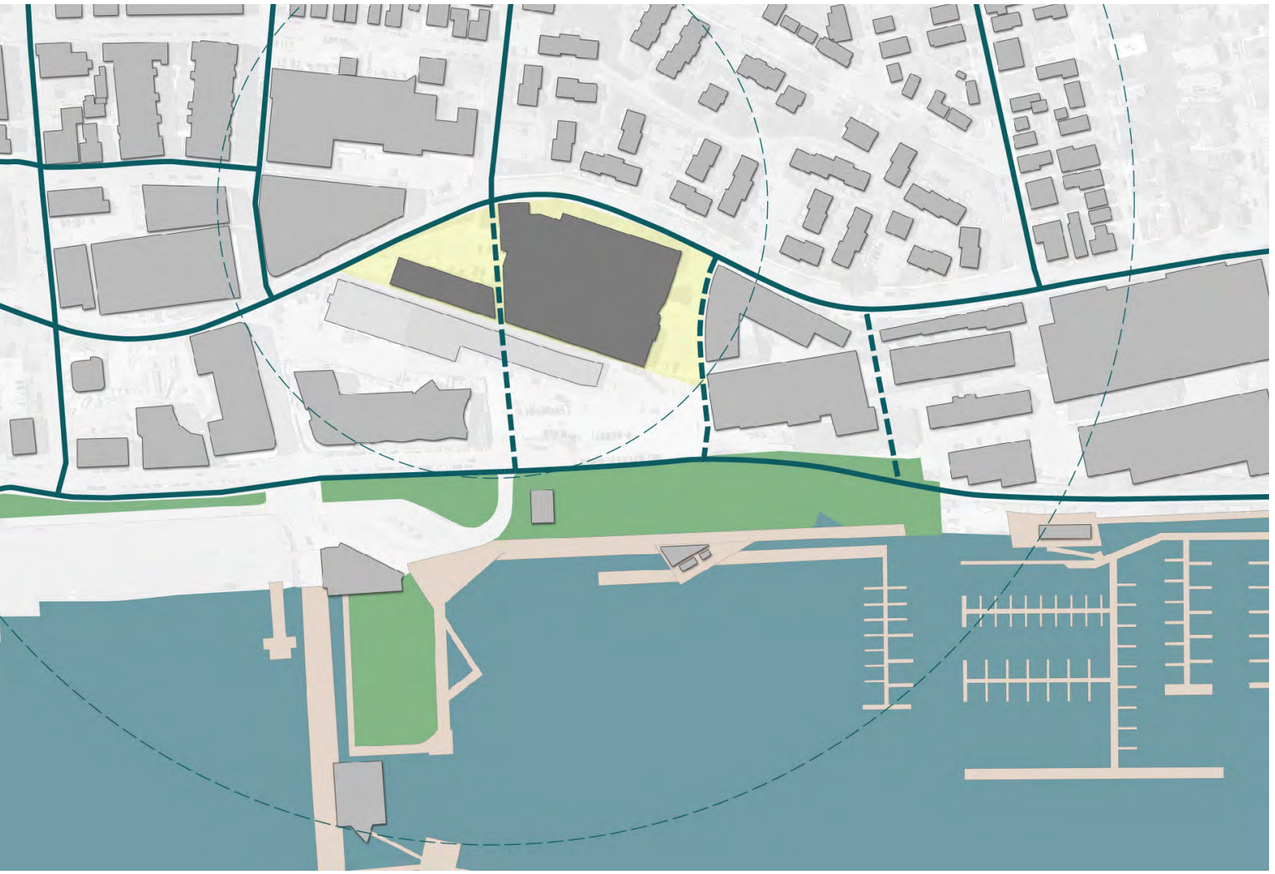
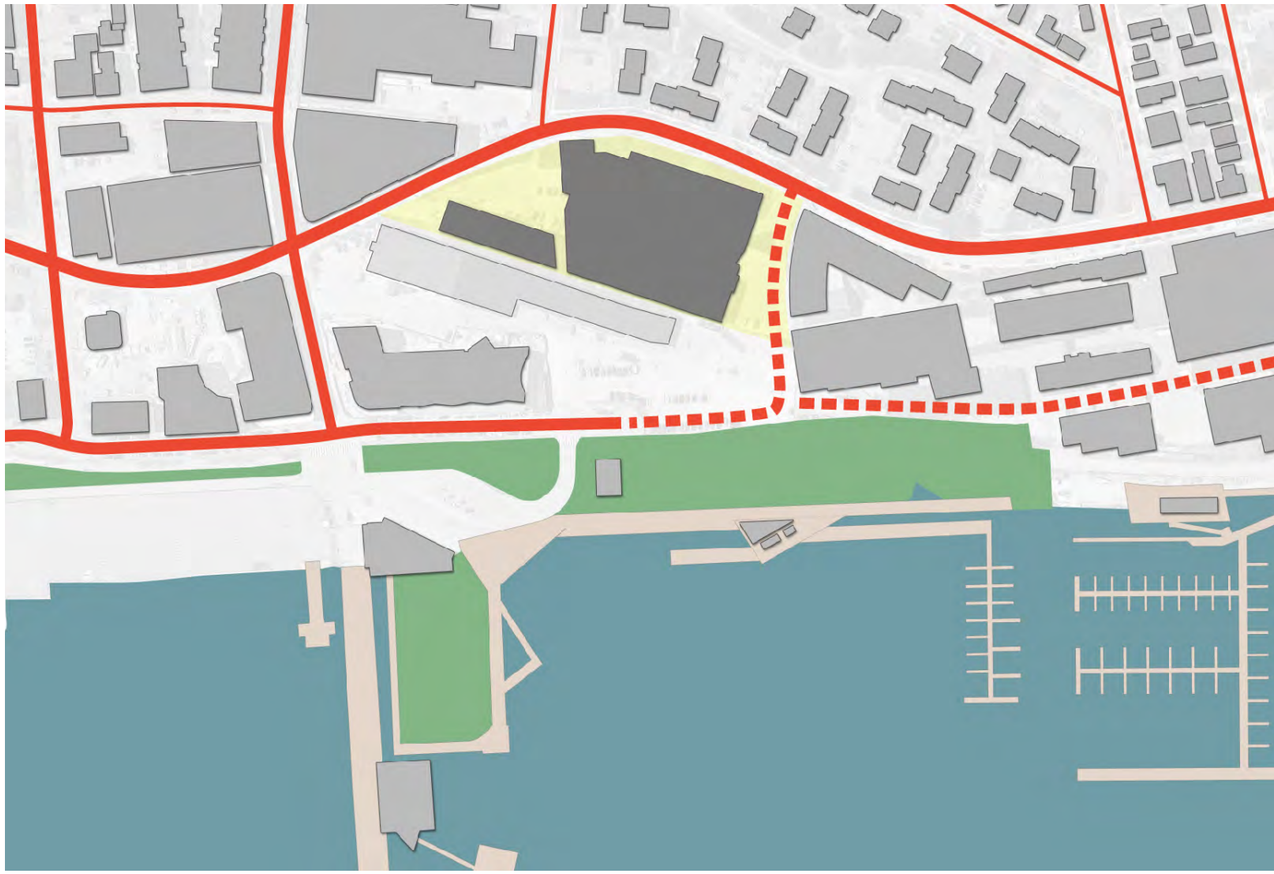


PEDESTRIAN CONNECTIVITY



VEHICULAR CONNECTIVITY

100 FORE STREET | SITE CONNECTIVITY
10.10.2018

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100 FORE STREET | SITE CONNECTIVITY- COMPOSITE
10.10.2018

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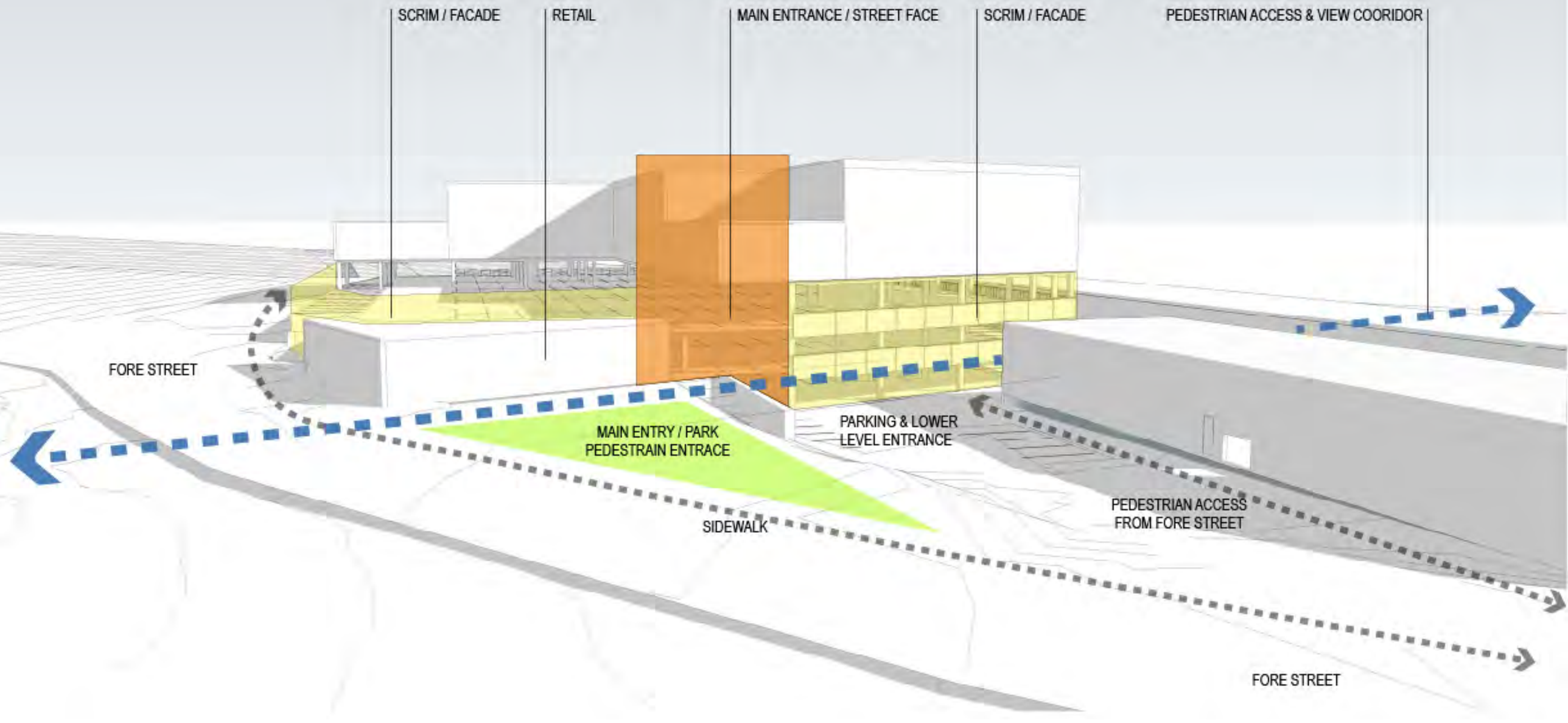

100 FORE STREET | SITE DIAGRAM
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100 FORE STREET | SITE PLAN
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100 FORE STREET | SITE PLAN SOUTH ENTRY PLAZA
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GREENROOF W/ NATIVE LOW MAINT. PLANTS

SCRIM CONTINUES AT 2ND FLOOR
TO CONCEAL PARKING AND REINFORCE
STREET WALL ALONG FORE ST.

OPEN STEPS ALLOWS FLEXIBLE MOVEMENT ALONG PUBLIC SIDEWALK. GRADE SEPARATION AND PAVING MATERIAL CHANGE DELINEATES PUBLIC AND PRIVATE SPACE

STEPPED WALLS BREAK UP MASS OF WALL - OPENS VIEWS TO EAST

UPPER LEVEL ENTRY

SHADE STRUCTURE FRAMES VIEWS TO THE BAY AND PROVIDE A SENSE OF ENCLOSURE AND SHADE WHILE IMPLYING A CONTINUATION OF THE STREET WALL

SCRIM / SCREEN CONCEALS PARKING DECKS

GREEN ROOF PROVIDES FRAMED HORIZON FRAMING
VIEW TO CASCO BAY



100 FORE STREET | SOUTH ENTRY PLAZA VIEW
10.10.2018

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100 FORE STREET | SITE PLAN FORE STREET PLAZA
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100 FORE STREET | FORE STREET PLAZA VIEW
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100 FORE STREET | SITE PLAN NORTH ENTRY
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10.10.2018

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Construction Management Plan
100 Fore Street
Cianbro Corporation
Revised: December 17, 2018

This document and its subsequent attachments comprise The Construction Management Plan being submitted to the City of Portland for the 100 Fore Street Project, located at 100 Fore Street. This plan is being submitted by Cianbro Corporation on behalf of the Owner of the property, 100 Fore Street LLC. The Construction Management plan contains information pertaining to the overall planning and coordination of the project.
The 100 Fore Street Project involves a new three story parking garage with 2 levels of office space above that. Total of approximately 600 new parking spaces with one floor of office space approximately 42,870 sf and the other office space approximately 39,080. The footprint of the building is +/-67,450sf.

A. Construction Management Principles

The impact of this project on the public will be minimized via the following construction management principles:

- The construction zone will be fully secured with hard barriers/fencing preventing any access into the site by the public.
- All construction activities will occur within the construction barriers/fencing to ensure the public is never exposed to any risks caused by the activities.
- There will be an onsite staging and unloading area for all deliveries which will prevent any impacts caused by offsite staging of trucks.
- All deliveries will be coordinated and scheduled to ensure that there is no off site queuing required. Cianbro plans to schedule as many deliveries as possible in the early morning to limit impact on the surrounding area.
- All construction activities will occur within normal working hours to minimize sound impacts to the surrounding area.

B. Development Review of Construction Management Plan

Cianbro has developed a logistics plan specific to this project. Please see **Exhibit A** of this document for the logistics plan.

Cianbro will also utilize a site specific safety program for all team members who work on the construction site. Each team member will complete a job specific orientation before starting work on the project site. The public will not be put at risk at any point throughout this project, as all work will be completed within the fenced off jobsite. At no point of the project will the public have access to this job site.

Cianbro shall submit a construction management plan that provides a comprehensive logistics and safety program for the construction project, which will be reviewed and approved as part of the site plan review process. Minimizing impacts to areas surrounding the building/construction site will be primary considerations in the process.

The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan or require a condition of approval that states an applicant shall coordinate a project's construction schedule with the timing of nearby construction activity, in order to avoid cumulative impacts on a neighborhood.

C. Performance Guarantees, Inspection Fees, Preconstruction Meeting, and Permits

All fees, permits, and guarantees will be paid/issued prior to construction commencing.

This project will require public street openings for utility tie-ins. Design is still being finalized on how many street openings will be required, since many of the utility tie-ins will be in the new Connector Road. All required permits will be requested and granted by the Department of Public Works prior to any street openings occurring. Street openings will need to occur on Fore Street. MUTCD plans will be submitted to and approved by the City of Portland for any traffic disruptions caused by street openings.

D. Construction Administration and Communication

The contact person for all construction activities for the project will be:

Brian Larsen: Project Manager
(207) 614-4342
blarsen@cianbro.com

Temporary signage will be posted onsite with additional contact information for the contractor.

E. Construction Schedule

The preliminary construction schedule for the project starts in January of 2019 and runs through December of 2019.

A detailed construction schedule with be submitted as more information is received and put into the schedule.

All construction activities will be completed during daytime hours, there will be no need for night work. All deliveries for this project will also occur during normal daytime hours.

F. Security & Public Safety

See **Exhibit A** for fencing and barriers to be used to isolate the construction site from the public. All gates into the project will have knox locking devices to allow for emergency access.

The fire safety program onsite will consist of the following:

- Fire extinguishers placed throughout the construction site for the duration of the project.
- The new fire alarm system installation will be ongoing throughout the project duration.
- All team members will be briefed on the emergency evacuation plan for the project site prior to starting work.

G. Construction Permitting and Traffic Control Plans

Construction Activity in Public Streets: This project will possibly require street openings on Fore Street. These openings might be required to tie the building into the electrical, water, sewer, and storm water systems. Prior to any of this work starting, permits will be submitted for and approved by the Street Opening Clerk at the Department of Public Works.

Sewer and Storm Water: This building will need to connect to the new sewer and storm water systems being installed on the Connector Road. All required permits will be submitted for and approved by the Street Opening Clerk at the Department of Public Works.

Traffic Control Plans: There will be periods of time throughout the project where construction activity impacts the existing public street system. Prior to any interruptions and MUTCD plan will be created and submitted to the city for approval. The MUTCD will ensure that traffic and safe passage for the public is maintained in a satisfactory manner.

H. Site Management and Controls

The following actions will be taken by Cianbro as regular site management and control activities:

- Construction site signage will be provided, installed, and maintained by Cianbro throughout the duration of the project.
- Access to the site will be controlled
- Trash and debris will be removed from site via a construction dumpster which will be changed out as needed on a regular basis.
- Street cleaning will not be required on a regular basis, but if it is deemed necessary Cianbro will coordinate the cleaning of any excess dirt that has resulted from construction activities.
- Onsite snow removal will be Cianbro's responsibility.
- Demo trucks will pull into the site and be loaded up with debris. Debris will be separated on the site so demo trucks will not be needed to be staged.
- Arrangements will be made if the Cianbro Site Office Trailer needs to be relocated depending on Connector Road construction.
- Cianbro will coordinate any major deliveries with other construction sites in the area to minimize disruption to the neighboring areas.
- A 300 Ton crane will be used to erect the structural steel and precast plank for the project. It will setup in the middle of the footprint of the building and work its way out of the building towards the existing Hamilton Marine building.

I. Erosion Control and Preservation of Trees

Erosion control measures will be installed onsite prior to any work commencing. A complete erosion control plan will be put together and reviewed with the city at the preconstruction meeting. Some of the measures that will be taken are utilization of silt sacks and fences to protect the surrounding area from any silt run off form the site. The control measures will be maintained daily and inspected weekly or after any major rain event. The inspections will be documented for review by the City of Portland, Maine Department of Environmental Protection or the U.S. Environmental Protection Agency.

All stored materials onsite will be located away from any trees or vegetation.

J. Construction Staging Area

Exhibit A of this document is the site logistics plan for the project. This plan shows the location of the onsite staging area for materials. The logistics plan also depicts the onsite truck unloading/staging area. All trucks will be unloaded within the construction site's foot print to avoid and impacts on public traffic. An offsite marshalling area will not be required for this project.

Exhibit B of this document shows one of the truck access routes that we are proposing, but need final approval from the City. We are also open to other options the City might have for this site.

K. Parking During Construction

Construction parking will be the responsibility of each contractor working on the project and will be off-site. Each contractor will make arrangements to get their team members to the site.

We are recommending Contractor parking either in the Ocean Gateway Parking Garage or at the Park and Ride on Marginal Way where they can be transported to the site by their company.

L. Special Measures as Necessary

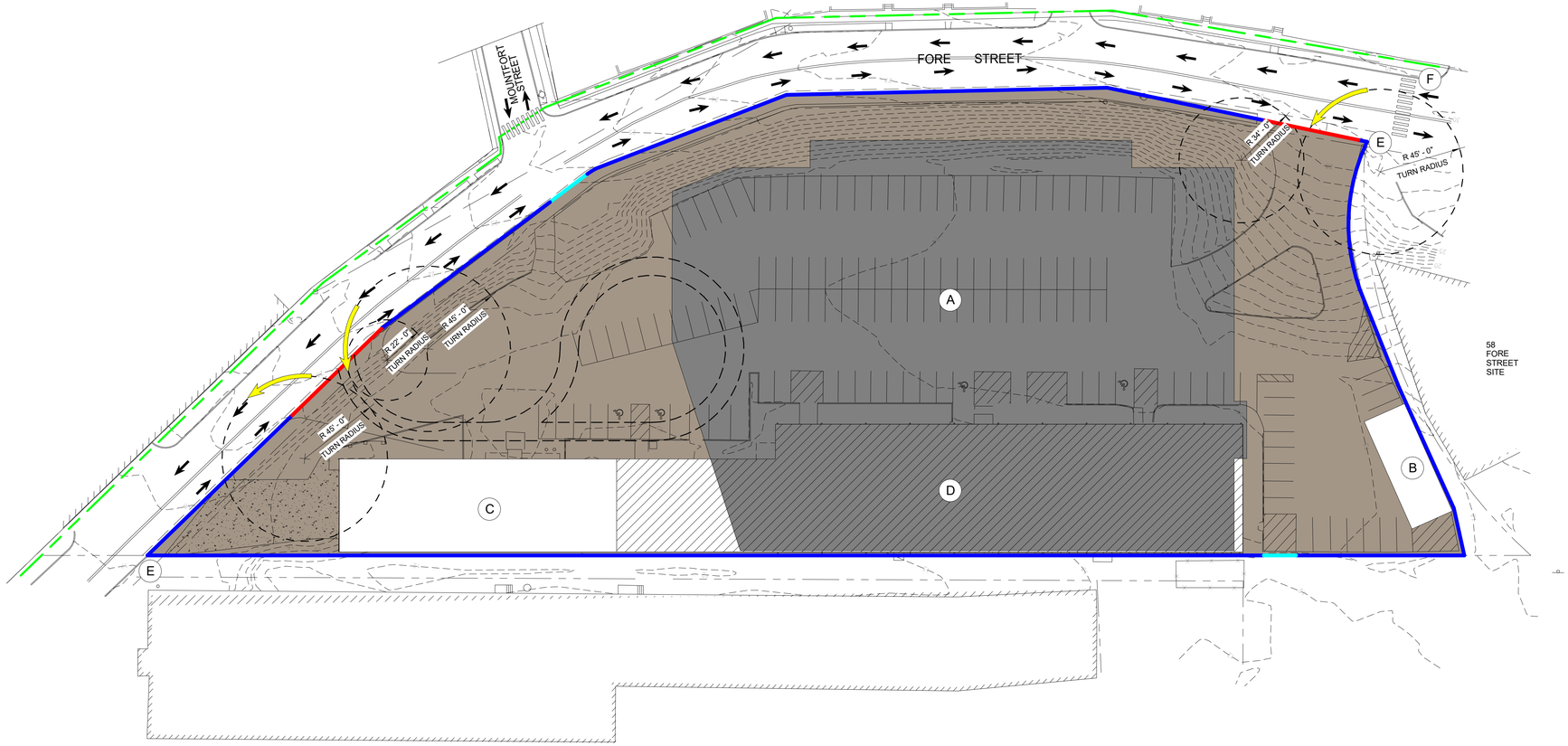
There will be no special measures necessary for this project.

Please do not hesitate to contact me with any comments, questions, or concerns regarding the 100 Fore Street Project and subsequent construction management plan.

Sincerely,

Brian Larsen
Project Manager
Building
CIANBRO
Mobile (207) 614-4342

EXHIBIT A



GRAPHIC KEY

- TRAFFIC FLOW
- PEDESTRIAN ACCESS
- JERSEY BARRIERS WITH FENCE PANELS
- CONSTRUCTION ACCESS GATE WITH SIGNAGE
- PERSONAL ACCESS GATE WITH SIGNAGE
- CONSTRUCTION ACCESS ONLY

LEGEND

- (A) PROPOSED BUILDING FOOTPRINT
- (B) LOCATION OF SITE OFFICE
- (C) EXISTING BUILDING TO REMAIN
- (D) EXISTING BUILDING TO BE DEMOLISHED
- (E) SIDE WALK ALONG CONSTRUCTION SITE CLOSED
- (F) CROSSWALK TO REROUTE PEDESTRIAN ACCESS

SIGNAGE AT ALL ACCESS GATES

CIANBRO
www.cianbro.com
PEOPLE - PRIDE - PROGRESS

NO TRESPASSING
AUTHORIZED PERSONNEL ONLY
VIOLATORS WILL BE PROSECUTED

NOTICE
This is a Tobacco Free Site
Use and Possession of Any Tobacco Products Is Strictly Prohibited

NOTICE
Hard Hats, Safety Glasses and Hard Toed Boots REQUIRED BEYOND THIS POINT

NOTES:

CLIENT:
0 HANCOCK STREET, LLC
CIANBRO

PROJECT:
100 FORE STREET
100 FORE STREET
PORTLAND, ME 04101

Rev.	Description	Date

SCALE: 1/32" = 1'-0"
PROJECT NO:
ISSUE DATE: 10/05/18
CAD DWG:
DRAWN BY: MFP
CHK'D BY: LED

COPYRIGHT:
FINAL DRAFT CAD LLC
203 Anderson Street, Portland, ME 04101
207-805-8786 | www.finaldraftcad.com

SHEET TITLE:
SITE LOGISTICS PLAN

L101

SHEET NO. 1 OF 1

EXHIBIT B

ENLARGED SITE TRAFFIC PLAN



GRAPHIC KEY

- TRUCK TRAFFIC PATH
- CONSTRUCTION ACCESS ONLY
- (P) PARKING LOT
- FL FLAGGER

SIGNAGE AT ALL ACCESS GATES



NOTES:

CLIENT:
0 HANCOCK STREET, LLC
CIANBRO

PROJECT:
100 FORE STREET
100 FORE STREET
PORTLAND, ME 04101

Rev.	Description	Date

SCALE: As indicated
PROJECT NO:
ISSUE DATE: 11/19/18
CAD DWG:
DRAWN BY: MFP
CHK'D BY: LED

COPYRIGHT:
FINAL DRAFT CAD LLC
203 Anderson Street, Portland, ME 04101
207-805-8786 | www.finaldraftcad.com

SHEET TITLE:
TRAFFIC MANAGEMENT PLAN

L103

SHEET NO. OF 1

A R C H E T Y P E

November 15, 2018

100 Fore Street Re-Submission

This submission includes revisions to the design based on input from the Planning Board workshop as well as following meetings to continue reviewing updates. The changes address the opinion that the first version was too complicated in its use of materials especially when used in addition to the complicated massing which is driven by the zoning. It was also decided that there was a general lack of hierarchy in the elements.

In response the concerns about materiality, the overall scheme has been simplified while the massing has remained generally the same, with some minor changes. We are still working with curtainwall and aluminum panel, but the major office massing has been all wrapped in curtainwall with the core and shaft elements carrying the aluminum panel in just one proposed color.

In terms of colors for both the glass and the aluminum panel, it was suggested that the building carry the same color scheme as the new Wex building going in on Thames Street in order to create a campus feel and we are open to that idea.

In the first Planning Board workshop the use of a stainless steel mess to wrap the garage was questioned, again the thought that the building was too complicated. That material has been removed and materials from the floors above are now carried down. There is one façade facing lower Fore where the curtainwall continues down across the garage levels with the spandrel to glazing ratio adjusting accordingly. On the elevation facing the water, the alucobond continues down with some ribbon window openings that transition into open air openings to allow for open garage calculations. It is also important to remember than if the city lot below develops per zoning, this elevation will be visually buried with the connector road elevation being the element which reads from Thames Street.

Massing-wise there have been some changes. The parapets were previously angled and now continue straight back to the center of the building at a continuous height. This allows them to create hierarchy with the masses they are on, one facing the water, one facing the city and one facing Munjoy hill, without adding more complication to the complicated massing. The main entry to the office building, located on the connector rd, has been pulled forward and angled from its footprint to the roof in order to allow for a glass wrap on it and to create faces that oriented up towards Fore Street and down towards Fore Street. It has become a prominent feature setting it apart from the other stair towers and creating hierarchy in elements.

The final area that has been updated but is still being worked on is the building's relationship to Fore Street at the property line. We have been working with the landscape architects to create a language that carries through the site elements into the building such as the angle that is taken from Mountfort Street and brought into the site and angles of the building facades. Previously the material treatment of the retail spaces were aluminum panel in a blue. Now the two bookends are treated differently, but each relating to the portion of the larger building they are in contact with. The southern portion is the gray aluminum panel pulled from the building reorienting from a

48 Union Wharf, Portland, Maine 04101 (207) 772–6022• Fax (207) 772–4056

vertical stair element to the horizontal retail element and anchoring the building back into the slope. At the northern retail component, the curtainwall has been carried onto the street as the building cascades down with these full glass steps derived from the zoning requirement of a step back at Fore Street.

The screen used to cover the garage at this elevation has gone through several iterations and is currently a perforated metal panel that allows light into the garage during the day and would allow a nice pattern of light to compliment the site work linking the retail components. This panel is to continue onto the faces of the retail elements that face into the plaza to make a complete plaza design. The height of the wall against the garage is still being discussed.

Although there are still areas that need refining we believe the building has improved since the first workshop.

Sincerely,



William K. Hopkins
Registered Architect

48 Union Wharf, Portland, Maine 04101 (207) 772–6022• Fax (207) 772–4056

Att. P

STORMWATER MANAGEMENT REPORT
(GENERAL STANDARDS)

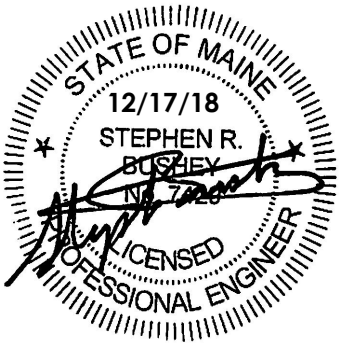
PROPOSED MIXED USE REDEVELOPMENT
100 FORE STREET
PORTLAND, ME

PREPARED FOR

100 FORE STREET, LLC
PO BOX 910
WESTBROOK, MAINE 04092

PREPARED BY

STANTEC CONSULTING LTD.
482 PAYNE ROAD
SCARBOROUGH, MAINE 04074
(207) 883-3355



December 2018

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STORMWATER MANAGEMENT REPORT

1.0 INTRODUCTION

Stantec Consulting Services, Inc. (Stantec) has been retained by 100 Fore Street, LLC for the site permitting and design of an existing developed parcel of land in downtown Portland. This 2.97-acre property is identified as Lot 10 on Tax Map 19, Block A within the City's mapping.

The proposed project consists of a three-level parking garage with commercial office space above it. Two small retail spaces will be located on the west side of the building along Fore Street as well. A portion of an existing building will be retained for the renovation into a private fitness center, benefitting site tenants and an offsite tenant. The development of the 100 Fore Street site is related to the land transfer of the former City property at 1 Hancock Street, now under construction for the WEX corporate headquarters. The City transferred that land under the agreement that a parking facility would be constructed on the 100 Fore Street property.

This section of the Level III permit application presents the Stormwater Management Plan designed for the project activities. The stormwater management design presented herein will show that it meets the criterion of the City of Portland stormwater requirements and the adopted MeDEP Chapter 500 Regulations.

2.0 EXISTING SITE CONDITIONS

The overall site is approximately 2.97 acres and currently has a 29,675 SF single story building with associated paved parking for approximately 136 vehicles. The existing building was home to several businesses including Hamilton Marine and Xpress Copy. There are two entrances into the parking lot off of Fore Street. The site's existing impervious conditions amount to approximately 100,320 SF (2.3 acres) or about 78% of the site.

A topographic survey was completed by Owen Haskell, Inc. The Western side of the property, which is defined by Fore Street, represents the higher elevation of the site which slopes East towards the shorefront. The elevations along Fore Street range from 30'+/- at the Northern end of the site to 17'+/- at the southern end of the site. The existing building is located on the south and east side of the property and has a finished floor elevation of 17.15'. Currently, the site is partially graded towards the center of the parking lot where there are several catch basins that collect some site runoff. It is believed that the catch basins tie into the City's combined sewer in Fore Street, however, the existing structures cannot be fully assessed without a thorough cleaning to examine pipe conditions and orientation. Two of these catch basins are plugged with debris and do not function properly. This causes the water to pool and sheet overland across the parking lot toward the south east corner on the site where it continues as overland flow to an existing catch basin in the City owned gravel parking lot. It is believed that the drainage system in the City's parking lot simply discharges to the Fore River via a pipe outfall through the revetment along the Amethyst site.

There are no existing stormwater treatment measures or controls on the existing site.

The site's soil layers are generally characterized as follows:

- 4 to 14 feet of Fill, described as sand with some silt and gravel with assorted man-made materials.
- 4 to 15 feet of Outwash Sand, medium to coarse sand or silt with some gravel.
- 0.6 to 26 feet of Glacial Till, dense and moist medium sand and silt.
- Bedrock was encountered at depths ranging from 16 to 45 feet.

3.0 PROPOSED PROJECT

The applicant proposes to redevelop the property in a manner consistent with the EWMZ Standards. The development program includes the following components:

ONSITE

The onsite project activities are as follows:

- Demolition of a portion of the existing building and the parking lot.
- Building area preparation for foundation construction.
- Construction of a 67,550+/- SF building footprint with three levels of parking and two upper floors of office space.
- Installation of utilities for the building.
- Construction of a new connector street linking Fore Street to the proposed Thames Street extension. Included with this aspect of the project is the installation of a 60" storm drain pipe that will extend from Fore Street to an outfall into the Fore River. This large capacity pipe is intended to serve future sewer separation projects the City will undertake in the east end and it will relieve flow from the very old combined sewer pipe in Fore Street. This pipe installation will also benefit the site by allowing the site's new drainage systems, including both roof drainage and the site drainage, to be discharged directly to the Fore River, thus precluding the need for any flooding control on the property in our opinion. A waiver of the flooding standards under Section 5 is being requested, given the site's runoff will discharge directly to the Fore River, which is a tidal waterbody.
- Construction of pedestrian facilities including sidewalks, several plazas, and a small surface parking area.
- Refurbish 9,150+/- SF of the existing building.
- Landscape and tree planting.

OFFSITE

The offsite project activities are limited to work within the Fore Street frontage and also for the connector street from Fore Street to the proposed Thames Street extension. The City of Portland is expected to undertake the construction of the Thames Street extension in 2019 and as part of that project the 60" storm drain outfall will be constructed to the river. The extension of the 60" storm drain up to Fore Street will also be performed, although the details for who is responsible for the construction remain to be discussed with the City. We note that the City may also require discontinuing the old service connections for sewer and any site drainage to the Fore Street combined sewer. The details as to the abandonment or removal of any old service ties has yet to be verified with city representatives.

4.0 REFERENCES

- Erosion and Sediment – *Maine Erosion and Sediment Control BMPs", published by the MeDEP in 2003* *http://www.maine.gov/dep/blwg/docstand/escbmps/index.htm*
- City of Portland –Code of ordinances, Section 32 Rev. 9-17-09
- Portland Stormwater Management –Section 5 Adopted 7-19-10.
- Stormwater Management for Maine Volume III – BMP Technical Design Manual
- Chapter 500 DEP Rules, revision October 2010.

5.0 MODELING SOFTWARE

Microsoft Excel 2007, Microsoft Corporation – used for spreadsheet computations.

6.0 PRESENTATION OF ANALYSIS

The stormwater analysis has been performed for the project to determine the requirements of the City of Portland, Section 5 and adopted MeDEP Chapter 500 Stormwater Rules and to show a plan which will generally meet the City standards. A full assessment of pre and post development runoff calculations and stormwater routing has not been performed on the basis that a waiver of the flooding standard is being requested. The site's impervious conditions will be altered slighting and the overall amount of impervious surface will be increased by 13,847 SF to a new total impervious area of 114,167 SF.

7.0 ASSUMPTIONS

- That onsite detention will not be required to reduce the peak flow rate or meet the flooding standards since the site's runoff will be collected and discharge to a new 60" Storm drain pipe that will discharge directly to the Fore River which is a tidal waterbody. **A waiver of the flooding standards is requested**.

8.0 STORMWATER MANAGEMENT OBJECTIVES

The goal of the Stormwater Management Plan is to design, operate, and maintain the development to avoid downstream erosion or significant water quality impairment.

This goal will be achieved by:

- Designing the project to meet the Portland Stormwater Management Standards adopted 7/19/10 and General Stormwater Standards of MeDEP (revised October 2010).
- Designing water quality measures to provide long-term removal of non-point contaminants.
- Implementing a plan to control erosion, sedimentation, or fugitive dust emissions during construction.
- Maintenance of the Stormwater Management System in accordance with the Stormwater O&M Manual.

The plan has therefore been designed in accordance with the City of Portland Stormwater Rules.

9.0 STORMWATER MANAGEMENT QUALITY SUMMARY

Approach

The proposed project results in an increase of approximately 13,847 SF of impervious area on the site. This does not trigger a Chapter 500 stormwater permit nor does the site meet Site Law thresholds as it is less than 3 acres in size. In accordance with Technical Manual Section 5.II.D. we have measured the existing and proposed impervious areas to understand the amount of new non-roof impervious area being created. The following summarizes these conditions:

Existing Impervious area	**Roof**	**Pavement/other**
100,320 SF	29,675 SF	70,645 SF
Proposed Impervious area		
114,167 SF	56,068 SF	58,099 SF

Based on these values, there will be a net decrease is non-roof impervious area on the site. However there will be redevelopment of over 5,000 SF of non-roof impervious area thus the project is required to meet the General Standards for no less than 50% of the developed area must be treated. Our office reviewed the list of options of MeDEP's accepted Best Management Practice (BMP) options to provide water quality treatment including grassed underdrained filter, bio-filter, proprietary devices and infiltration trenches for the redeveloped site. Following this review and incorporating knowledge of the site and the goals of the client, it was realized that developing a method for providing stormwater quality treatment that utilizes the proposed rooftop and parking lot surface and filtering the runoff through proprietary decentralized devices would be

preferable considering the proposed building will occupy more than half of the total lot area.

It was determined to be more beneficial and cost-efficient to treat the stormwater as it enters the system rather than trying to collect it and treat it in a centralized location before treating and discharging. On the rooftop and parking garage surface, a stormwater filter cartridge system will be utilized in the downspout leads from the deck and rooftop. The roof runoff will filter through the cartridges and then continue within the closed system to tie into the proposed 60" pipe system in the connector road. These cartridges do not provide storage but treat the water as it enters into the closed system. Similarly, the parking deck surface drains will follow columns to the ground level, where each lead will have an inline filter cartridge system, before continuing under the ground level floor and discharging to an oil-water separator. From the oil-water separator the water will flow into the new 60" storm drain for ultimate discharge to the river.

Finally, the site plans include the installation of a cartridge filter insert into a proposed catch basin that will be located within the surface parking lot to the west of the proposed building. This new catch basin and filter will provide water quality treatment for the small paved area and ground level parking area entrance drive.

10.0 STORMWATER TREATMENT PERCENT COMPLIANCE

The proposed redevelopment project creates 13,847 SF of new impervious area. This includes an increase in rooftop area and a decrease in overall open surface parking area with the parking garage. The new building rooftop area is approximately 43,336 SF and the exposed P1 parking deck area is approximately 21,456 SF. The proposed surface parking lot is approximately 6,000 SF. Each of these areas will be treated thru the cartridge filter systems. These areas amount to 70,792 SF or 62% of the proposed site impervious area, thus meeting the 50% treatment standard.

11.0 EROSION CONTROL

An Erosion Control Narrative, Plan, and Details have been prepared for the project and are part of the project plan set completed and submitted with the Level III Site Plan Application.

12.0 OPERATIONS AND MAINTENANCE

An Operations & Maintenance Manual has been prepared and is part of the stormwater management submission.

13.0 PERMIT REQUIREMENTS

City of Portland review and permitting of the Stormwater Management Plan is required and will be completed with the review of the Level III Site Plan Application submitted to the City of Portland Planning Authority.

STORMWATER DRAINAGE SYSTEM
MAINTENANCE AGREEMENT

Commercial Office/parking garage Building on 100 Fore Street

IN CONSIDERATION OF the site plan approval granted by the Planning Board of the City of Portland to the proposed Commercial Office Building at 100 Fore Street Project ID PL-000358-2018 shown on the Site Layout Plan submitted by Stantec Consulting Services Inc., and associated Grading, Drainage & Erosion Control Plan, (Exhibits A and B) prepared by Stantec, of 482 Payne Road, Scarborough, Maine dated last revised _____ and pursuant to a condition thereof, 100 Fore Street LLC, a Maine limited liability company with a principal place of business in Portland, Maine, and having a mailing address of P.O. Box 910, Westbrook, Maine 04098, the owner of the subject premises, does hereby agree, for itself, its successors and assigns (the "Owner"), as follows:

Maintenance Agreement

That it, its successors and assigns, will, at its own cost and expense and at all times in perpetuity, maintain in good repair and in proper working order the Roof and garage drain Filter Cartridge systems, Oil-Water Separator and related onsite drainage infrastructure, (hereinafter collectively referred to as the "stormwater system"), as shown on the Grading, Drainage & Erosion Control Plan in Exhibit B and in strict compliance with the approved Stormwater Inspection and Maintenance Manual prepared for the Owner by Stantec (copy attached in Exhibit C) and Chapter 32 of the Portland City Code.

Owner of the subject premises further agrees, at its own cost, to keep a Stormwater Maintenance Log. Such log shall be made available for inspection by the City of Portland upon reasonable notice and request.

Said agreement is for the benefit of the said City of Portland and all persons in lawful possession of said premises and abutters thereto; further, that the said City of Portland and said persons in lawful possession may enforce this Agreement by an action at law or in equity in any court of competent jurisdiction; further, that after giving the Owner written notice and a stated time to perform, the said City of Portland, by its authorized agents or representatives, may, but is not obligated to, enter upon said premises to maintain, repair, or replace said stormwater system in the event of any failure or neglect thereof, the cost and expense thereof to be reimbursed in full to the said City of Portland by the Owner upon written demand. Any funds owed to the City under this paragraph shall be secured by a lien on the property.

This Agreement shall also not be construed to allow any change or deviation from the requirements of the subdivision and/or site plan most recently and formally approved by the Planning Board of the City of Portland.

This agreement shall bind the undersigned only so long as it retains any interest in said premises, and shall run with the land and be binding upon the Owner's successors and assigns as their interests may from time to time appear.

The Owner agrees to record a copy of this Agreement in the Cumberland County Registry of Deeds within thirty (30) days of final execution of this Agreement. The Owner further agrees to provide a copy of

this Agreement to any successor or assign and to forward to the City an Addendum signed by any successor or assign in which the successor or assign states that the successor or assign has read the Agreement, agrees to all its terms and conditions and the successor or assign will obtain and forward to the City's Department of Public Services and Department of Planning and Urban Development a similar Addendum from any other successor or assign.

For the purpose of this agreement and release "Owner" is any person or entity who is a successor or assign and has a legal interest in part, or all, of the real estate and any building. The real estate shown by chart, block and lot number in the records on file in the City Assessor's office shall constitute "the property" that may be entered by the City and liened if the City is not paid all of its costs and charges following the mailing of a written demand for payment to the owner pursuant to the process and with the same force and effect as that established by 36 M.R.S.A. §§ 942 and 943 for real estate tax liens.

Any written notices or demands required by the agreement shall be complete on the date the notice is attached to one or more doors providing entry to any buildings and mailed by certified mail, return receipt requested or ordinary mail or both to the owner of record as shown on the tax roles on file in the City Assessor's Office.

If the property has more than one owner on the tax rolls, service shall be complete by mailing it to only the first listed owner. The failure to receive any written notice required by this agreement shall not prevent the City from entering the property and performing maintenance or repairs on the stormwater system, or any component thereof, or liening it or create a cause of action against the City.

Dated at Portland, Maine this _____ day of _____, 2019.

_____
(*name of company*)

_____
(*representative of owner, name and title*)

STATE OF MAINE
CUMBERLAND, ss. Date: _____

Personally appeared the above-named _____(*name and title*), and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Before me,

_____
Notary Public/Attorney at Law

Print name: _____

Exhibit A: Approved Site Layout Plan
Exhibit B: Approved Grading, Drainage and Erosion Control Plan
Exhibit C: Approved Stormwater Inspection and Maintenance Manual

Exhibit C
OPERATION AND MAINTENANCE FOR 100 FORE STREET MULTI-USE COMPLEX INCLUDING PARKING GARAGE AND OFFICES

PREPARED FOR:

100 FORE STREET LLC
PO BOX 910
PORTLAND, MAINE 04098

PREPARED BY:

STANTEC CONSULTING LTD.
482 PAYNE ROAD
SCARBOROUGH, MAINE

DECEMBER 2018

A. INTRODUCTION

The 100 Fore Street multi-use complex features multiple cartridge filter units on the roof drain downspout leads and garage drain downspout leads located within the building. An oil-water separator will also be installed as part of the below grade plumbing for the garage drainage system. The stormwater management system must be regularly inspected and maintained to ensure that each component is performing as intended throughout its life.

B. ROOF DRAIN CARTRIDGE FILTER UNIT

Preface: The roof drain filter units are intended to provide water quality treatment for runoff from the proposed roof surface prior to discharge into the municipal drainage system that will outfall to the Fore River. Primary contaminants from the roof include bird waste, metals, dust, and related pollutants.

Inspection: The roof filter units must be inspected to ensure proper function during rain events. Primary inspection goals include removal of debris, leaves, or related solids preventing filtering and water pass thru or blocking the internal overflow.

Maintenance: If the filter is not draining within 24 hours, the filter media shall be replaced in accordance with the manufacturer's instructions. Debris must be removed from the filter unit.

Frequency: During the first year, the units should be inspected quarterly and following all major storm events. Thereafter, the units should be inspected at least every 6 months. Debris and sediment buildup should be removed as needed in accordance with manufacturer's recommendations. The filter cartridges shall be replaced on an annual basis.

C. STORMWATER INLETS

Preface: The success of any stormwater facility relies on the ability to intercept stormwater runoff at the design locations. Stormwater inlets may include catch basins, open culverts, culverts with bar screens, roof scuppers, plaza scuppers, trench drains, and field inlets. Inlets exist throughout the system.

Inspection: The inspection of inlet points will need to be coordinated with other maintenance items, these include:

- Landscape services
- Building maintenance areas
- Grounds maintenance

The key elements of the inspection are to assure the inlet entry point is clear of debris and will allow the intended water entry.

Maintenance: The key maintenance is the removal of any blockage which restricts the entry of stormwater to the inlet. The removed material should be

taken out of the area of the inlet and placed where it will not reenter the runoff collection system. Snow should be removed from inlets on parking decks or plaza areas. Grass clippings and leaves should be bagged and removed particularly near the yard inlets near the building.

Frequency: All inlets should be inspected on a quarterly basis, and after/during significant storm events. Catch basin sumps should be pumped out once a year.

Maintenance/Inspection Responsibility:

Maintenance Personnel: The maintenance personnel will perform the normal maintenance/inspections of the inlets and tributary drainage system.

Comments: Maintenance of inlets is critical on this project.

D. TRIBUTARY DRAINAGE SYSTEM

Preface: The stormwater conveyance system will be principally overland flow discharging to piped collection/conveyance systems. Most of the sediment carried by the drainage system is intended to be trapped near the inlets or in within sumps in structures.

Inspection: The tributary drainage system should be periodically inspected to assure that it is operating as intended, and that its carrying capacity has not been diminished by accumulations of debris and sediment or other hydraulic impediments. On piped systems, the inlets must be inspected to ensure the rims are set at the proper elevation to optimize flow entry and are not clogged with debris. The inlet catch basins are normally equipped with sumps and hooded outlets which will remove gross floatables and large sediment particles from the flow stream.

The level of sediment in the sumps should be checked to assure their effectiveness. Pipelines connecting the inlets should be checked to determine if siltation is occurring. This will be most critical on drain lines laid at minimal slopes. This can usually be accomplished by a light and mirror procedure.

The oil-water separator should also be checked on a quarterly basis to determine if it needs to be pumped out.

Maintenance: Maintenance of the storm drainage system must assure that it continues to serve its design function on a long-term basis, and that its operation does not transport excessive sedimentation to any downstream receiving water. Elevations on the rim of catch basins should be adjusted as needed to assure optimal water entry. Depending on the frost susceptibility of the soil, the rims may become elevated over time causing flow to circumvent the inlet. Catch basin cleaning would normally be accomplished with vacuum trucks contracted as a maintenance service for the owner. The removed material must be disposed of at an approved site for such materials.

If sediment in the pipeline is observed, it should be removed. This may be accomplished by hydraulic flushing, or by mechanical means. If hydraulic flushing

is used the downstream conditions should be analyzed. The tidal influence can aggravate sediment deposition since there are periods of no flow. Backwater valves at the pipe discharge to the Fore River is intended to reduce this occurrence.

The oil-water separator may require pumping to remove captured product or similar contaminants. This work should be performed by a licenses operator such as Clean Harbors and any pumped product shall be handled in accordance with local, State and Federal regulations.

Frequency: The piped drainage system should be inspected on an annual basis. Adjustment of inlet rim elevations should be on an as needed basis. Cleaning catch basin sumps and pipelines will depend on the rate of accumulation. The oil-water separator should be inspected on a quarterly basis.

Maintenance/Inspection Responsibility:

Special Services: The owner will contract with an independent agent for cleaning of catch basins, sumps, oil-water separator and pipelines. Remedial source control measures may be performed by the owner or an outside service depending upon the nature of the situation.

Comments: Maintenance of inlets of utmost importance to the project to avoid unintended roof loading and ice accumulation.

E. RECORD KEEPING

Records of all inspections and maintenance work accomplished must be kept and maintained to document filter operation and related site maintenance. These records should be filed and retained for a minimum 5-year time span. The filing system should be capable of ready retrieval of data for periodic reviews by City staff associated with the City's stormwater program. Copies of such records should also be filed with the City's Stormwater Program Coordinator. A Typical inspection and maintenance record form is attached hereto as Attachment B.

F. CONTRACT SERVICES

In some instances or at specific times, the owner may not have the ability to conduct the required inspection and/or maintenance programs as outlined in this document. In such case, the work should be accomplished on a contractual basis with a firm or organization that has the staff and equipment to accomplish the required work.

The service contract for inspection and maintenance should be formal, well-written legal document which clearly defines the services to be provided, the contractual conditions that will apply, and detailed payment schedules. Liability insurance should be required in all contracts.

ATTACHMENT A

Sample Inspection Logs

100 FORE STREET MIXED-USE COMPLEX
100 FORE STREET, LLC
PORTLAND, ME

ROOF AND GARAGE DRAIN DOWNSPOUT FILTERS, OIL-WATER SEPARATOR, CATCH BASINS AND FILTERS ANNUAL INSPECTION & MAINTENANCE LOG			
FACILITY:		**YEAR:**	
LOCATION: 100 Fore Street		**CONTRACTOR:**	
FUNCTION:		**INSPECTOR:**	
DATE OF INSPECTION:			
ITEM IDENTIFICATION	**DESCRIPTION OF CONDITIONS**	**MAINTENANCE ACCOMPLISHED**	**DATE OF MAINTENANCE**
GENERAL COMMENTS:			

STORMWATER MANAGEMENT SYSTEM MAINTENANCE PROGRAM – SUMMARY CHECKLIST						
		Frequency				
Item	**Commentary**	**Monthly**	**Quarterly**	**Semi-Annual**	**Annual**	**Long Term**
Vegetated Slopes	Slopes and related ground surface should be inspected for erosion and sedimentation		X (until vegetation established)		X	
Oil-water separator	Shall be inspected for the collection of any product and properly pumped for disposal.		x			
Drainage systems	Inspect all catch basins, pipe systems and related inlets			x		
Roof and Garage Drain Filters	Inspect systems to verify adequate functioning and capacity. Dispose of filters that have reached useful life in accordance with manufacturer's recommendations. Replace filters as required.	X				
Litter	Litter should be removed daily.					

Neighborhood Meeting Certification

I, Stephen R. Bushey, P.E., hereby certify that a neighborhood meeting was held on Wednesday, October 24, 2018 at 100 Fore Street, Portland, Maine at 5:30 P.M.

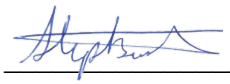
I also certify that on October 12, 2018, invitations were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division, including property owners within 500 feet of the proposed development or within 1000 feet of a proposed industrial subdivision or industrial zone change.

2. Residents on the "interested parties" list.

3. A digital copy of the notice was also provided to the Planning Division (jmy@portlandmaine.gov and ldobson@portlandmaine.gov) and the assigned planner to be forwarded to those on the interested citizen list who receive e-mail notices.

Signed,



Stephen Bushey, PE

October 25, 2018
(date)

Attached to this certification are:

1. Copy of invitation sent
2. Sign-in sheet
3. Meeting minutes

Stantec Consulting Services Inc.
482 Payne Road Scarborough Court, Scarborough ME 04074-8929

October 12, 2018

Dear Neighbor:

Please join us for a Neighborhood Meeting to discuss our plans for the proposed development at 100 Fore Street (Tax Map 19/Block A/Lot10) in Portland, ME. The proposed project includes a 540 space three level parking garage with two levels of commercial/office space amounting to approximately 82,000 SF. 100 Fore Street LLC has filed a Level III Site Plan Application with the Planning Authority and will be presenting at the October 23, 2018 Planning Board Workshop. A public hearing is anticipated in November 2018.

Meeting Location:	**100 Fore Street (Former Xpress Printing) Portland, Maine (park in the large onsite lot)**
Meeting Date:	**Wednesday, October 24, 2018**
Meeting Time:	**5:30 PM**

The City Code requires that property owners within 500 feet (except notices must be sent to property owners within 1,000 feet for industrial zoning map amendments and industrial subdivisions) of the proposed development and residents on an "interested parties list", be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board. The meeting will last no more than 30-45 minutes.

If you have any questions, please feel free to contact Steve Bushey, P.E. at 207-883-3355.

Sincerely,

STANTEC CONSULTING SERVICES, INC.

Stephen R. Bushey, P.E.
Associate

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Note: Under Section 14-32(C) and 14-525 of the City Code of Ordinances, an applicant for a Level III development, subdivision of over five lots/units, or zone change is required to hold a neighborhood meeting within three weeks of submitting a preliminary application or two weeks of submitting a final site plan application, if a preliminary plan was not submitted. The neighborhood meeting must be held at least seven days prior to the Planning Board public hearing on the proposal. Should you wish to offer additional comments on this proposed development, you may contact the Planning Division at 874-8721 or send written correspondence to the Planning and Urban Development Department, Planning Division 4th Floor, 389 Congress Street, Portland, ME 04101 or by email to: bab@portlandmaine.gov

Neighborhood Meeting Sign-In Sheet
Project: 100 Fore Street, Portland, Maine

Date: October 24, 2018, 2018
Time: 5:30 PM
Location: 100 Fore Street – Former Xpress Printing

Name	Company	Telephone No.	Email Address
Steve Bushey	Stantec	207-887-3478	stephen.bushey@stantec.com
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Stantec Consulting Services Inc.
482 Payne Road Scarborough Court, Scarborough ME 04074-8929

MEETING MINUTES

Project: **100 Fore Street, Portland, Maine**

Job #: **210801622**

Date: **October 24, 2018 – 5:30 PM**

Location: **Project Site – 100 Fore Street; Former Xpress Printing**

Subject: **Neighborhood Meeting**

Attendees: **See Attached Sign-in Sheet**

In accordance with the City of Portland Planning Board Requirements, a Neighborhood Meeting was scheduled to discuss the proposed 82,000± SF building which includes 540 space, three level parking garage with 2 levels of commercial/office space project.

The meeting was held on Wednesday, October 24, 2018 at 5:30 P.M. and Steve Bushey, representative from Stantec, was present on site from 5:15 PM–6:00 PM. Two (2) members of the public attended the meeting.

Stantec Consulting Services Inc.
482 Payne Road Scarborough Court, Scarborough ME 04074-8929

December 18, 2018

Ms. Christine Grimando
Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

Subject: Level III Site Plan Review
100 Fore Street
Tax Map 019/Block A/10
Letter of Response #1 to Planning Staff Review Comments

Dear Christine:

On behalf of **100 Fore Street, LLC** (Applicant), our office has received and reviewed Planning Staff review comments contained within the November 30, 2018 Planning Memorandum and your list of open items dated December 6, 2018, regarding the Level III Site Plan Application for the 100 Fore Street property. We offer the following responses to these comments and also providing additional information related to the new plan upload that accompanies this response letter. For ease of reference, we have repeated the comments in *italics* followed by our responses in **bold**.

100 Fore Street Items Still Needed:

- *A TDM plan*

Response:

A Draft TDM Plan was prepared by Cushman Transportation Consulting, LLC and is included with this submission package. The initial TDM coordinator for the development will be Sarah Cushman, author of the TDM plan and who we believe is at the forefront of TDM strategy and implementation.

- *A stormwater management and drainage plan*

Response:

A Stormwater Management and Drainage Report and supporting Operations & Maintenance Manual and Draft Stormwater Management Agreement is included with this submission for Staff review.

- *Location of snow storage/disposal areas, details on snow removal*

Response:

Snow storage will be limited on the site given the limited availability of space. The owner will contract for snow removal services to include the site and P2 parking deck. It is expected that snow removal for that portion of the P2 deck exposed to snowfall will involve small skid steers

and pushing of snow off the deck onto the ground level as depicted on the site plan. At the ground level snow will be removed and trucked away for offsite stockpiling.

- *Identification of areas for delivery, loading zones, trash removal areas and circulation in these areas.*

Response:

The site plans include a layout plan detailing site access conditions. The primary access will be from the proposed connector street extending from Fore Street to the proposed Thames Street Extension. The connector will consist of a 32' wide road section (curb to curb) that will contain a travel lane in each direction and space for parking on the east side of the street. Like many streets, there will be adequate space for a loading zone to be positioned at the main building entrance that will serve for delivery vehicles such as FedEx/UPS and similar services. Parking on the east side of the connector opposite the loading zone will be prohibited, so as to allow for adequate street width when delivery vehicles are parked at the main entry tower.

Trash collection will be within an enclosure to be positioned at the west end of the existing site (at the end of the former Hamilton Space) with an existing access off Fore Street to remain.

- *Identification and contents of required easements (extension of proposed water, sewer, drainage up Fore Street Connector, pedestrian easement for sidewalk area along Fore, Mountfort Street ext.).*

Response:

We anticipate that the utilities that will be extended along the connector drive from Fore Street down to the proposed Thames Street Extension will include the following:

- storm drainage (City Public Works);
- water (Portland Water District);
- sanitary sewer (City Public Works);
- underground power and communications (CMP, Spectrum, Consolidated and fiber); and
- natural gas (Unitil).

The connector road is ultimately planned as a public way, although the details and discussions between the owner and City officials remain ongoing. As such, the utilities in the connector road will be the responsibility and ownership of each utility provider. The development will include service ties to one or more of these new utilities and these connections will be considered simply as services, with no specific need of easements, other than for the primary power feed to the proposed pad mount transformer (easement to CMP).

Pedestrian easements for those areas outside of the Fore Street Right of Way or the proposed connector Right of Way remain to be determined and subject to direction from the City. It is understood that the developer will be responsible for maintenance of yard areas outside of the public Right of Way. Further discussion between the developer and City officials regarding extended developer responsibility for sidewalk maintenance in the public Right of Way (similar to the WEX site) may be required, although it is currently the developer's expectation that all

sidewalks and areas in the Fore Street or proposed connector road Right of Ways will be the ultimate responsibility of the City.

- *Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks*

Response:

The plans now include plan and profile sheets, cross sections and various details associated with the construction of the various site elements, including, but not limited to, paved areas, plaza areas, and sidewalks.

- *Turning templates for delivery vehicles*

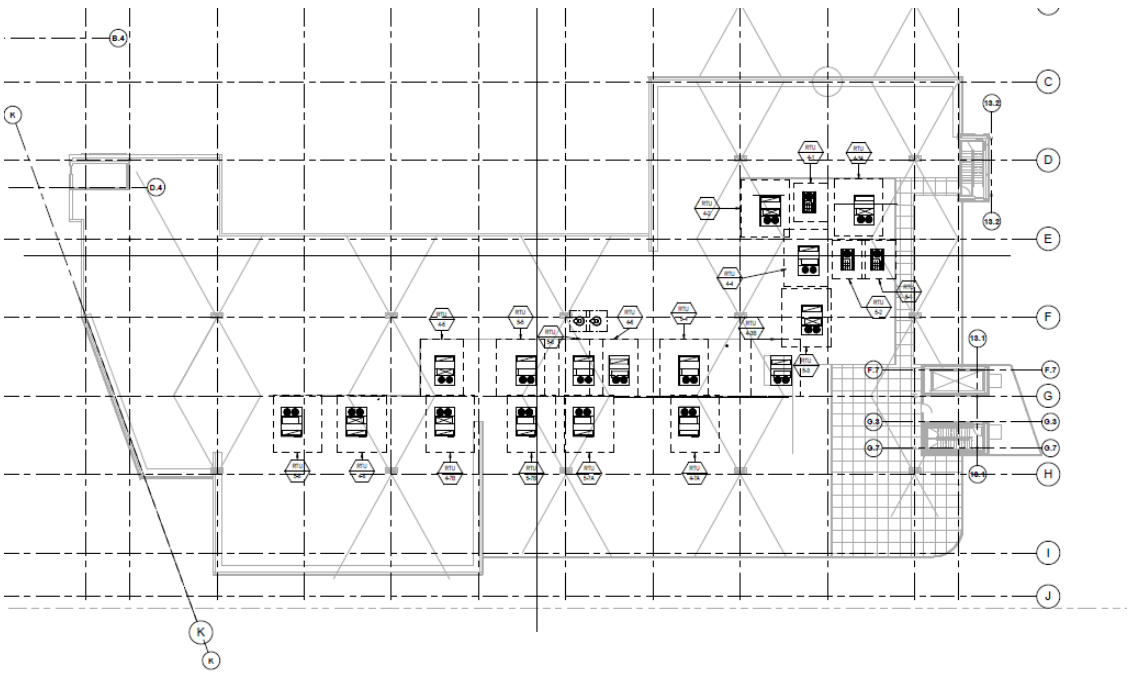
Response:

An AutoTURN turning plan for fire safety has been prepared and should satisfy the requirements for delivery vehicles. The plan is included with the site plan submission.

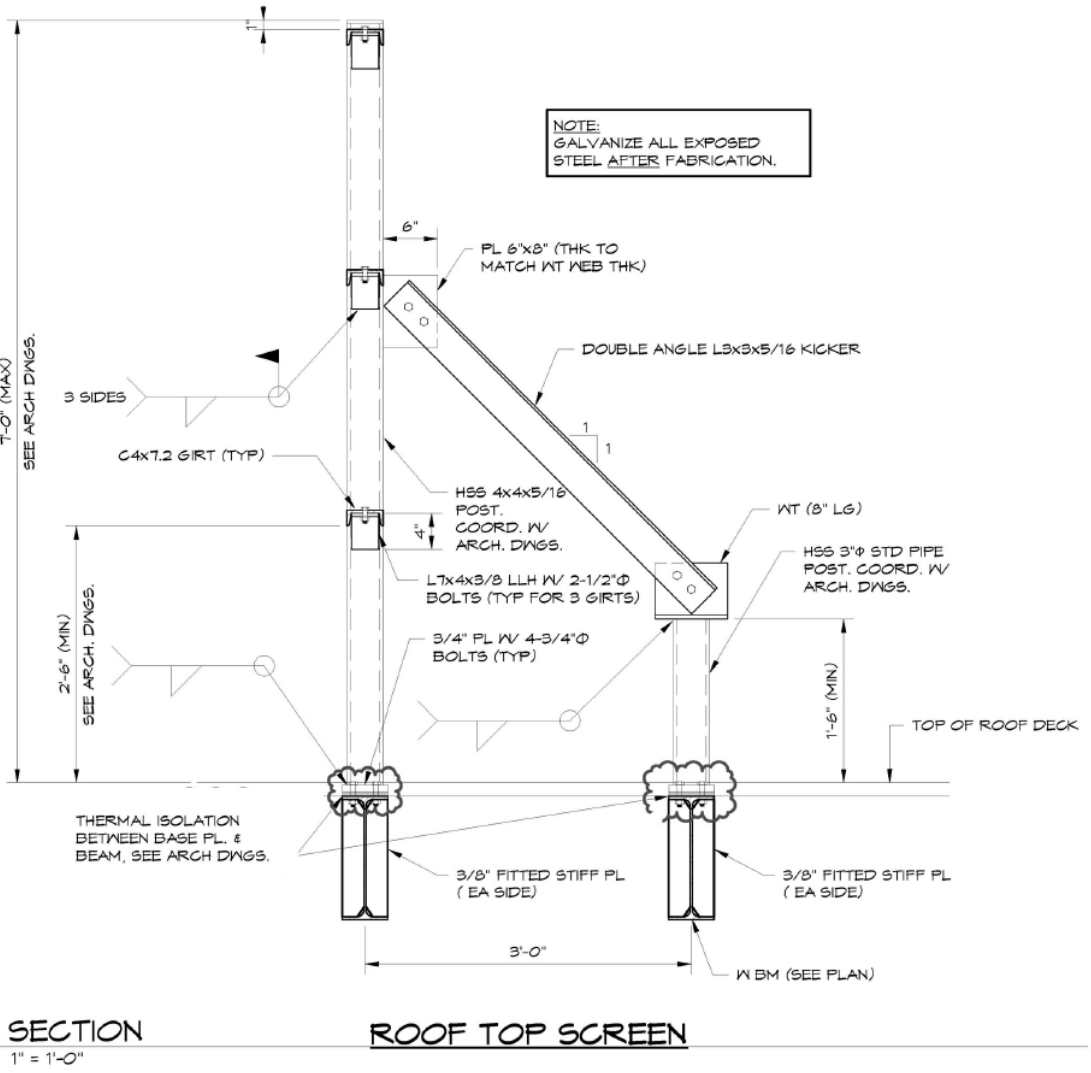
- *Location, dimensions and specifications of HVAC and mechanical equipment and associated screening*

Response:

Packaged rooftop equipment will be provided for each thermal zone on each level of the office levels. All packaged equipment will be located on the upper roof and grouped towards the center of building. Catalog information pertaining to the various HVAC equipment pieces is part of the upload accompanying this letter. Screening will be provided around the packaged equipment as identified below.



NOTE: TO BE CLAD IN UNA CLAD EXPOSED FASTENER PANEL, OMEGA VR PROFILE IN SLATE GRAY



3 SECTION 1" = 1'-0" — ROOF TOP SCREEN

- *Existing soil conditions and locations of test pits and borings.*

Response:

Summit Geoengineering Services has completed a geotechnical report for the property and this report included with this submission. The onsite soils consist of existing fill, outwash sand and glacial till. The building foundation will be supported using ground improvements consisting of stone columns/aggregate piers. The onsite soils conditions have been found suitable for the proposed development.

- *Inclusion of on-street parking spaces on Fore Street Connector design.*

Response:

The connector road design has been discussed with City representatives including Keith Gray, Bruce Hyman, and Justin Pellerin. We believe there is direction to provide a 32' wide (curb to curb) street width and that will allow for a travel lane in each direction as well as parking on the east side of the roadway. This street section is 4' wider that the typical Local street section depicted in the Technical Manual.

- *Inclusion of fitness center and surface parking spaces in site plan application materials, including building renovations, site changes, and intended allocation of parking spaces. Surface parking spaces should address 14-270.(2).a.*

Response:

The basic floor plans for the Fitness Center have been uploaded. A portion of the existing building will be demolished to make way for the proposed garage and office building. The building area to remain is primarily at the west end of the building, which was formerly occupied by Hamilton Marine retail. Approximately 9,100 SF will remain for the proposed fitness center. The exact detail of the interior floor planning for the fitness center remain incomplete at this time. However, the fitness center is intended on being a private facility open to the tenants at the 1 Hancock Street building (now WEX) and the proposed onsite office space. As such these fitness center users will have access to the proposed parking garage, the Gateway Garage, and the 16 surface parking spaces to be located adjacent the building. It is not believed that the fitness users will contribute to any new parking demand given the parking availability surrounding the site and given that these users are already accounted for in the parking demand studies completed for the WEX site and the proposed 100 Fore street development.

Urban Designer Memo Dated November 21, 2018 and Ongoing Commentary with Archetype PA

Response:

See the accompanying narrative dated December 14, 2018 prepared by Archetype Architects along with the supplemental renderings, building elevations, and floor plans detailing the various changes made by the architectural team in response to an ongoing dialogue with the urban designer review.

- *Waiver requests should be clarified and restated.*
    - *Site Plan 14-526(a)3., Public Transit Access is not applicable. Site Plan 14-526(b)2, Landscape Preservation is not applicable. The applicant has requested a waiver from Site Plan 14-526(a)4.b, Location and Required Number of Bicycle Parking Spaces until the TDM is brought forward (see additional comments re: Technical Manual standards, below). If the applicant wishes to reduce the total number required, analysis showing reduced demand is required to grant a waiver, since this is the criteria for a waiver of this standard. If the request is to defer final location of spaces, I recommend this be included as a condition of approval instead, tied to approval of the TDM. I recommend the applicant withdraw the first three waivers.*
    - *Unless electric service will be placed underground, a waiver request is required for 14-526.(c).3.b (Electrical service shall be underground unless otherwise specified for industrial uses, or if it is determined to be unfeasible due to extreme cost, the need to*

retrofit properties not owned by the applicant or complexity of revising existing overhead facilities).

- *A waiver request is required for 14-270.(2).b that address the criteria of 14-270.(2).b.ii to not include first floor mixed-use along the length of Fore Street.*
- *A waiver request for variations from technical manual standards, such as those for street trees, if applicable (or meeting of alternatives addressed in Technical Manual) and spacing of driveways. Waivers for driveway spaces standards will need to be accompanied by supporting traffic and safety analysis.*

Response:

The waiver request list has been updated per these comments and is included with this submission. The applicant is not requesting a waiver of the underground electric service requirement. The site will be served by a new underground service from Fore Street to the building. We are not however adjusting the existing overhead services along Fore Street as that is not required for the proposed development.

Archetype Architects has prepared a narrative outlining the waiver request related to provisions within 14-270.(2).b that is included with this submission.

- *Mitigation of Lighting levels for residential neighbors*

Response:

Swaney Lighting has been responsible for the preparation of site lighting plans including the lighting for the parking decks. The site lighting information shows the placement of the Beacon Viper S LED (by Hubbell Lighting) fixture on the P2 parking deck. These fixtures will be pole mounted at 15' or 18' height. The following key points are provided for the site lighting:

- Pole mount fixtures are IDA (Dark Sky) approved.
- Pole mount fixtures on perimeter of open parking deck utilize back light control optic to reduce light spill.
- The maximum light level on the open deck is 3.1fc which is below the City requirement for max of 5.0fc
- Fixtures can be controlled via a time schedule for off hour light reduction.
- Fixtures can be equipped with an occupancy sensor for reduced light levels during unoccupied periods.

The interior deck lighting will include ceiling mounted Endura fixtures at a 10.5' height. These fixtures include 27 to 110 watt arrays and rectangular or square optics. The following lighting calculation summary is contained on the lighting plans that accompany the current upload:

Location	Average	Maximum	Minimum	Avg./Min.	Max./Min.
Ground Level	3.43	68.5	0.0	N/A	N/A
Typical Drive Lane	2.89	5.20	1.80	1.60	2.9 0
P1 Level	3.60	76.30	0.0	N/A	N/A
Typical Drive Lane	2.78	5.40	1.70	1.60	3.20
P2 Parking Deck	3.43	75.10	0.10	34.30	751.0
Open Deck	1.45	3.10	0.40	3.60	7.80

- *Need for coordinated construction management with other construction sites in area.*

Response:

Cianbro has updated the Construction Management Plan to address comments set forth by Keith Gray, dated November 15, 2018. The updated CMP has bee uploaded for review.

- *Allocation of parking spaces, esp. amount above 10% must address 14-526.(a).4.a.iii: "Developments proposed to exceed minimum parking requirements by 10% or more must demonstrate through a parking analysis that the among of parking is appropriate for the proposed use of the site This analysis should include fitness center spaces.*

Response:

Traffic Solutions has prepared the Parking Analysis for the development which is included with this submission. As outlined in the analysis, the applicant is constructing additional parking spaces, within a structured parking facility, to meet the terms of the Purchase & Sale Agreement (dated September 11, 2017) for purchase of the 1 Hancock Street (WEX) property. The onsite parking demand based on the City Code is approximately 215 spaces and the overall parking supply on the site will be 539 spaces within the three-level parking deck structure and 16 surface spaces for a total of 555 spaces. The balance of parking for 340 spaces will be available for other tenants or for general public parking.

Planning Board Items:

- *Pedestrian circulation around building, for occupants of 100 Fore.*

Response:

The updated site plans include clarity on the pedestrian circulation of the building and we believe address various staff comments and interests of the Planning Board members. Specifically, the main building entrance is located at the east side, off the proposed connector road between Fore Street and the proposed Thames Street extension. City standard sidewalks bound the site along the east side, Fore Street, and then along an extension of Mountfort Street that will bisect the site. The ultimate goal of the west side plaza space is to provide a public visual opening through to the south and also connectivity to the proposed street level retail space. A stairwell on the west side of the building will allow access for the office tenants and parking deck users to the west side plaza and sidewalk connectivity to points west of the site, including Hancock Street, Mountfort Street and India Street. Connectivity to Commercial Street, Thames Street and the east end trails will be substantially improved via sidewalk links along the proposed connector road to Thames Street extension and perhaps in the future along an extension of Mountfort Street down to Thames Street.

ALA Landscape Architects have weighed in with the following narrative:

"The exterior spaces at 100 Fore Street provide flexible a free moving experience for pedestrians and occupants arriving from all locations of the City. At the southwest plaza, tapered granite steps encompass the length of plaza along the sidewalk, acting as a collector for pedestrians arriving from downtown, across from Mountfort Street, and down Fore Street. The southwest

plaza provides outdoor seating for the retail space, occupants of 100 Fore, as well as for the general public. The City sidewalk continues around the north side of the 100 Fore Street site where the sidewalk expands into quasi plaza space flanked with a raised planter that acts as seat wall. The 8' City sidewalk continues around the north end of the building, around the corner retail space, and down to the building's main entrance along the proposed connector road. The City sidewalk opens to an expansive plaza at the main entrance, where seating and bike racks are located for occupants of 100 Fore Street and the public."

- *Arborist weigh-in on plantings, viability, shade, maintenance*
- *Pedestrian experience on Fore Street, at retail spaces, between retail spaces, in plaza*
- *Woonerf alternatives, bollard placement, safety*
- *Greater articulation of retail space*
- *Role of second tower facing Fore Street connector to activate space*
- *Cramped primary entrance area*
- *Façade along connector road needs attention*
- *Safety of stairs in winter, maintenance*

Response:

ALA Landscape Architects and Archetype Architects have prepared brief narratives outlining their response to these comment and other architectural and landscape architecture pieces which accompany this submission.

- *Fire Dept. weigh-in*

Response:

A letter containing the Fire Safety Checklist was previously submitted to Division Chief Robert Thompson in October 2018 (included in original submission). We will follow up with the Fire Department to assure their review is completed and any necessary provisions to address emergency services for the site are done.

Traffic, Parking, Circulation:

- *Number, alignment, location of driveways. Of particular concern is the concern about the impact on the streetscape/pedestrian accessibility/public realm on the close proximity of the entrance/exit of the 2nd/top level of the parking garage to Fore Street due to the interface of grades of the proposed connector road from Fore Street and the parking garage entrance/exit (approx. 15%).*

Response:

The P2 deck entrance design has been updated since the original submission and is now designed at a maximum grade of about 12.6%. The design of the P2 ramp location is based on the most practical location to overcome the vertical change in grade from the site to the deck which is at elevation 35.0'. The highest approach is from the proposed connector road at the northeast corner of the property. Traffic Solutions has evaluated the operational capacity of the P2 deck based on the following conditions:

- The P2 deck will include 179 parking spaces and it is currently contemplated that all these spaces will be reserved spaces for office tenants in the building.
- The distance from the entrance gate control to the connector street is approximately 60 feet which will allow for a queue of up to 3 vehicles.
- Based on a conservative cycle length of 15 seconds for each entering vehicle, the hourly capacity is estimated as 240 vehicles which exceeds the parking capacity of the deck. On this basis, the expectation is that queues entering the P2 deck should be relatively low and will not extend back into the Connector road or Fore Street.
- The applicant intends to use Unified Parking Partners for the operations of the garage. We are currently discussing additional strategies for entrance controls that might further improve the operations of each deck entrance. This might include electronic controls such as swipe cards, remote controls etc. that will speed entering movements and further reduce possible queuing issues. Additionally, the developer can work with tenants, through the TDM plan, to work with staggered employee work start times and associated strategies to improve access and capacity. We note that the proposed P2 garage entry will have queueing capacity that is considerably more than at other garages in the City, as evidenced by the Portland Harbor Hotel Garage entry as shown below.



- *The corner radii of the driveway off of Fore Street to the ground level parking garage should be adjusted to be smaller or turning templates provided to justify how large they are - the driveway width at the property line appears to be approximately 35'.*

Response:

The driveway design has been modified to eliminate the radii and use the tapered entrance configuration consistent with the City Technical Manual.

- *The location of light fixtures/poles appears to be inconsistent across drawings - on some plans their location creates pinch points along the Fore St in relationship to utility poles.*

Response:

The locations of the City standard light poles have been updated as depicted on the latest Site lighting plan. The positioning of the light poles will be done in a manner to avoid "pinch points"

along the Fore Street frontage and in several locations the poles will be positioned behind a landscape edge to be positioned outside of the Fore Street right of way and within the site limits.

- *Detectable Warning Panels are not required across driveways as shown on Fore Street driveways.*

Response:

The detectable warning panels have been removed from the plans.

- *The curb ramp at the SW corner of Fore St and the proposed connector road should be split into two distinct curb ramps.*

Response:

The corner ramp design has been updated based on this comment. We have eliminated that Fore Street crosswalk at this location based on the existing on street parking that is currently in place on the opposite side of Fore Street.

- *The clear sidewalk width along Fore Street is to be a minimum of 6' wide - the plans state "existing overhead lines to remain" - if so, a minimum sidewalk width of 8' is to be provided along the entire project frontage.*

Response:

The updated site plans allow for a minimum width of 8' along the Fore Street frontage. In some areas, this is substantial greater and up to 12'.

- *If on-street parking is to be provided, I suggest consideration of the reduction in the curb to curb width of the proposed connector road to 32' from the proposed 36'.*

Response:

The current plans have been updated to provide a 32' wide street section for the connector road.

- *The applicant is to provide justification for the 18 surface parking lots at the ground floor parking garage entrance and gym.*

Response:

The latest plans include a total of 16 surface parking spaces adjacent the fitness center. These spaces will be available to the Staff using the fitness (either WEX employees or onsite tenants). The owner is seeking flexibility to allow this small number of spaces, within an existing parking area, to allow for future land use changes to the existing building or simply as amenity for the fitness center.

- *The applicant shall explain the location/distribution and number of bicycle parking spaces provided in relation to building entrances and the opportunity for covered/secure bicycle parking as described in the Technical Manual:*

- *Section 1.15.1. Bicycle parking intended for long-term use (residential or full-time employee parking) shall be provided under covered areas and/or in secure storage lockers."*
- *"1.15.3. Commercial, Industrial (requiring more than ten (10) bicycle parking spaces):*
  - ***A minimum of ten percent (10%) of required bicycle parking shall be provided within fifty (50) feet of the main egress point of the structure, or shall be no further from such entry than the nearest five (5) non- handicapped parking spaces.*
  - ***Where there is more than one structure on a site, or where a structure has more than one main entrance, the parking shall be distributed to adequately serve all structures or main entrances."*

Response:

Bicycle parking is being provided at multiple locations on the site as follows:

- Five (5) bike racks (capacity of two each) will be provided within the ground level parking. Ten bike racks will be provided within each of the P1 and P2 levels. This will provide for a total of 50 bicycles. These locations are identified on the architectural floor plans by Archetype.
- The landscape materials plan by ALA provides for five (5) bike racks at the west end of the site. They also show 14 bike racks at the ground level adjacent the former Hamilton space and five (5) bike racks at the main entry plaza on the east end of the site. This provides a total capacity of 48 bikes.
- *Details needed for curb ramps, sidewalks, driveways.*

Response:

The latest plans include a full series of construction details for curb ramps, sidewalks and driveways.

- *More information is needed on how separate parking levels will function or be managed. Application will need to indicate which parking level is serving which users, type of spaces (hourly, monthly, reserved).*

Response:

The applicant will be working with Unified Parking Partners for the garage operations. Each parking level is separately accessed as follows:

- Ground Level – Access from driveway from Fore Street to 184 spaces in the garage and 16 surface spaces. The ground level parking is expected to be primarily available to the general public for "pay-for" parking and for overnight parking associated with storm events, etc. The ground level parking may also be used for reserved parking for lease to nearby users. The entrance controls are likely to include a gate and ticket system and remote pay station. Like all levels, the garage will be unmanned for gate operations.
- P1 Second Level Deck – Access from the connector road at the southeast corner of the building. The P1 level is expected to be a combination of reserved and open parking for the general public for the 182 parking spaces.

- P2 Third Level – Access from the connector road near the Fore Street intersection. The P2 deck will have 179 reserved parking spaces and also have gate controls for entering/exiting.

The applicant will work with the parking manager for the placement of signage and related elements that will aid with identifying parking availability to the general public.

Additional comments from the City Peer review traffic consultant are as follows:

Tom Errico, City Traffic Engineer Comments

The Applicant has conducted a trip generation analysis and concluded the project does not meet requirements for a Traffic Movement Permit given project details and trip credits for existing land uses. However, I continue to review the review methods used, which will ultimately determine whether the project will meet Traffic Movement Permit thresholds. Items needing further review include:

- *Specific reductions for existing traffic generation from the site is being reviewed. The reduction of Hamilton Marine is based on an earlier peak hour (3:30-4:30PM) and this may be inflated as compared to the typical commuter peak hour. Specific time-of-day peak hour generation from Hamilton Marine will be further reviewed. A similar review will be conducted for IBec Creative/Jade Integrated Health where 9.6 trips per 1,000SF was recorded (this is a very high trip rate per 1,000SF).*

Response:

We understand that these comments have been addressed as part of the Traffic Study completed by Traffic Solutions, a copy of this is included with this submission.

- *Use of a Shared Use Trip Reduction Factor (15%) needs further review given future area characteristics and anticipated tenant details.*

- *Use of a Mode Share Reduction Factor of (12.8%) needs further review given project TDM details and gaining a better understanding of ITE trip generating assumptions and what level of alternative modes activity was in place at the site surveyed (ITE is not likely to provide this information).*

- *An understanding of the number of employees may help to confirm expected trip generation. It is my understanding the office building will have 350 employees.*

Response:

See updated Traffic Study by Traffic Solutions.

- *The number of driveways to the site seems excessive. I am concerned about corner clearance to the level 2 garage entrance; the provision of a very wide driveway to the Gym Building (and spacing to the abutting driveway); and the angle of the driveway to the Ground level garage.*

Response:

Updates to the site plans address these comments to the best practical means.

- *Information on how each parking level will be managed shall be provided. Given the lack of interior circulation, the parking garage lacks opportunities for optimal sharing of the parking supply.*

Response:

See previous responses.

- *If the Fore Street connector becomes a City Street, the Applicant should provide information on how the proposed roadway configuration would fit in the future public right-of-way and what would the ultimate full cross-section consist of.*

Response:

See previous responses and plan updates that reflect a 32' wide street section per direction of various city representatives.

- *The Fore Street connector roadway is proposed to be 28-feet wide. On-Street parking is to be prohibited. Determination on the appropriate right-of-way should be performed.*

Response:

See previous responses and plan updates that reflect a 32' wide street section per direction of various city representatives.

- *The Applicant should provide details on how will truck deliveries be accommodated.*

Response:

Deliveries will be from the proposed connector road, which at a 32' wide street width is expected to adequately provide for delivery vehicle maneuvering.

- *Crosswalks should be provided across Fore Street at the Fore Street connector road intersection.*

Response:

The crosswalk across Fore Street has been eliminated due to the existing on-street parking provided on the opposite site of the street.

- *The Applicant shall provide width dimensions for all driveways.*

Response:

See site plans for further information.

- *The southerly Fore Street curb alignment has sharp angle points. Adjustments may make sense and review with DPW staff is suggested.*

Response:

See the updated site plans that are intended to address this comment.

- *The Applicant shall provide a detailed parking demand/supply analysis.*

Response:

Traffic Solutions has completed a parking analysis that has been uploaded for review.

- *Accommodation of Fire vehicles in the connector road drop off area further crowds this area. Depending on the outcome of Fire Department feedback, alternatives should be explored.*

Response:

We await further input from Fire Department officials.

- *Further traffic analysis is needed where the access drives intersect with Fore Street*.

Response:

See Traffic Study by Traffic Solutions for further information on site access conditions and capacity.

The following is a summary of the uploaded materials as of December 17, 2018.

- Draft TDM Plan (Cushman Transportation Consulting, LLC)
- Stormwater Management Report, O&M Manual and Draft Stormwater Agreement
- Geotechnical Report (Summit Geoengineering Services)
- HVAC Information (Johnson & Jordan)
- Architectural Narrative (Archetype Architects)
- Updated Waiver Request
- Construction Management Plan (Cianbro)
- Traffic Analysis & Traffic Study (Traffic Solutions)
- Updated Civil Series Plans
- Updated Architectural Plans, Renderings, Building Elevations & Floor Plans by Archetype
- Updated Landscape Plans by ALA Landscape Architects
- Site Lighting Plans and Photometrics by Swaney Lighting

We trust that this information meets the needs of City Staff in completing your Final review of the project proposal and we look forward to making a final presentation to the Planning Board at their January 8, 2019 meeting.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Stephen R. Bushey, P.E.
Associate
Phone: 207-887-3478
Fax: 207-887-3376
stephen.bushey@stantec.com

Enclosures (see list above)

c: Bill Hopkins, Archetype Architects
Jonathan Cohen, 100 Fore Street LLC

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Stantec Consulting Services Inc.
482 Payne Road Scarborough Court, Scarborough ME 04074-8929

January 4, 2019

Ms. Christine Grimando
Planning and Development Department
City of Portland, Maine
389 Congress Street
Portland, Maine 04101-3509

Subject: Level III Site Plan Review
100 Fore Street
Tax Map 019/Block A/10
Letter of Response #2 to Planning Staff Review Comments

Dear Christine:

On behalf of **100 Fore Street, LLC** (Applicant), our office has received and reviewed various Planning Staff review comments over the past several weeks and we have made some revisions to the site plans reflecting changes made to address staff concerns. The following is a summary of the updates that have been made to various site plans that have been uploaded as of today's date. These modifications will be reviewed with the Planning Board at the January 8th Public Hearing.

Plan updates

1. We have closed off the most westerly driveway and continued the new brick sidewalk thru this location as was requested by Tom Errico. Because of this closure, the trash collection for the buildings will be within an enclosed trash room to be located at the ground level parking area of the main building. The trash vendor will use the ground level entrance drive to service the trash room. Totes and wheeled containers will need to be hand moved for placement into trash collection vehicles. This change also eliminates the need for a waiver associated with greater than two driveways off a single street.

2. We have modified the corner conditions at the proposed east side connector road and Fore Street, adjacent the proposed east side retail space. This is in response to comments from Caitlyn Cameron. The revision includes a broader brick sidewalk surface area that will function to allow pedestrians greater ease of direct movement from the Fore Street sidewalk onto the Connector Road sidewalk, as they might travel to the main building entrance, or further down to the future Thames Street Extension.

3. We have modified the west side plaza to eliminate the granite steps off the backside of the Fore Street sidewalk. Instead, we propose two raised planters that will help provide a modest separation of the plaza from the sidewalk. The objective is to allow the plaza space to be a possible extension of the adjacent retail, whereby, if the retail space were to be a small café, for example, then the plaza might also allow for

seasonal outside table or seating space for patrons. There remains ample connectivity of the plaza space to the Fore Street sidewalk in our opinion, although there will be a bit more defined boundary between the two areas.

4. We have clarified the cross-walk conditions across each parking deck entrance off the connector road, to include brick surfaces, like the brick sidewalks, as is required under the Technical Manual.

5. The accompanying landscape plan reflects changes made to address comments from Jeff Tarling, transmitted on January 3, 2019.

6. The future (tentative) Right of Way associated with the proposed connector road has been modified to a width of 55 feet. This will place the west side ROW line just behind the proposed 8' wide sidewalk. The overall street section remains unchanged and the plans currently depict a 32' wide paved street width with granite curbing and 8' wide brick sidewalks. The construction of the brick sidewalk on the east side of the road will be by others (presumably the 58 Fore Street developer at the time they complete their proposed building program).

7. Various updated renderings of the project have been prepared by Archetype and these have been uploaded for your review. These too will be presented at the January 8th Public hearing.

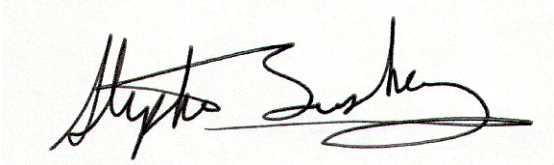
As we discussed on January 2nd with Tom Errico and staff we are also in the process of completing a schematic for the placement of a future divider island within the connector at the P2 parking garage deck entrance drive. This divider island would control entering/exiting movements to a right in/right out configuration potentially, if, after the review of these entrance conditions sometime after project completion, it is determined by City staff, the peer review consultant and our traffic consultant, that there is a safety or operational issue.

We understand there are other staff comments pertaining to ongoing coordination with the City DPW and their designer for the Thames Street extension project, including specific utility coordination. Given the ongoing nature of the City design work for the Thames Street Extension we trust that a condition of approval might appropriately allow this continued coordination over the next week or so and that final plans would be tied to the issuance of a Building permit. This coordination effort would also include completion of a final stormwater management plan that satisfies the peer review comments from Lauren Swett and other staff comments that might be received prior to the Public hearing.

We trust that this information meets the needs of City Staff in completing your Final review of the project proposal and we look forward to making a final presentation to the Planning Board at their January 8, 2019 meeting.

Sincerely,

STANTEC CONSULTING SERVICES INC.



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stephen.bushey@stantec.com

Enclosures (see list above)

c: Bill Hopkins, Archetype Architects
Jonathan Cohen, 100 Fore Street LLC

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December 14, 2018

100 Fore Street Re-Submission

This submission includes revisions/additions to the building design for the parking garage and office building proposal located at 100 Fore Street. During the previous Planning Board workshop the main item being discussed in terms of the architecture of the building was the entrances and the retail spaces. The entrances still needed work with hierarchy and the retail spaces needed an element to help bring them to the human scale and to tie them together.

The new renderings included in the submission show how the main entrance for the office space, located on the new connector road has been added to to give it more prominence and hierarchy. There is now a canopy element landing at the first level and reaching towards the road. The material choice is steel columns and beams with the webs infilled with a wood-look material such as Nichiha vintage wood. The arms are then topped with a floating frosted glass canopy that will be edged with an LED strip and cap to softly illuminate the cover at night. The use of the modern materials ties the canopy back to the contemporary building but the Nichiha and lighting add a warm element that indicates the entry. The form of the arms was derived from the shading element on the plaza at the west side of the building but adapted for the scale of the entry tower.

The back wall of the entry tower is that of the stair and elevator shaft leaving a blank canvas that we have taken advantage of. By applying a mural that runs the full height of the tower, we have created visual interest at each level that when viewed from a distance at the exterior reads as the complete image. We like that this is experienced differently from the interior and exterior and creates a strong visual element to the main entry.

For the entry to stair C, the one that accesses the office space and parking levels from the plaza at the west end, we continue to downplay it in terms of signage and scale as it is not the main entry for the use. But we do agree that it will become an important access point for office users coming and going from the plaza itself as well as the Old Port. We see this as a benefit to the project as it will help to activate the plaza. The shading element that covers a portion of the plaza has been continued to cover the stair door as well as the access to P1 that opens up in between the retail component and the stair shaft. This ties it to the other directions of movement that feed the plaza, and rather than the covered roof that was previously proposed it helps to bring natural light into the openings. The plaza is designed to encourage foot traffic from all directions in its relationship to the street and now with the stair, the garage access to P1 and the stair tower access we encourage foot traffic from the garage side of the plaza as well.

In terms of the retail, a shading device has been added to the perimeter of both retail locations that extends out above the glazing. This helps to bring the human scale to the facades while the wall height was previously extended to help with the presence of the components in relation to the streetscape. The face of the shading system is clad in the same wood-look product that is found in the arms of the canopy to the main entrance of the building. It becomes a visual cue that leads the pedestrian up Fore Street and the use of the warm material in a simple form then links the retail facades to the office entry.

We believe that the use of the warmer colored material and the addition of detail to entries helps to push the building architecturally as well as tying it together as one design.

100 Fore Street

Att. U

Transportation Demand Management Plan

December 17, 2018

A. Summary

100 Fore Street, LLC provides this Transportation Demand Management (TDM) Plan for its proposed redeveloped multi-use site, located on the 3 acre parcel of the same address. This is another recent and rare opportunity for urban infill and redevelopment in the City of Portland and on the Eastern Waterfront. The project consists of first floor retail uses, two levels of office space, retaining a portion of the existing building for a fitness center, and three levels of structured parking.

The 100 Fore Street TDM Plan aims to help accommodate this new growth and benefit the local transportation system through strategic parking management that supports transportation alternatives and reduces the rate of drive-alone trips to and from the site. Parking at the site will be unbundled from the tenant leases and tenants will be required to either offer their employees a parking cash-out (see page 11 for more detail) or charge them for parking. Tenants will also pay an annual per-square-foot fee to support 100 Fore TDM programming and one employee per tenant will serve as a representative on the building's TDM committee.

After the initial trip and parking projection reductions for pre-existing shared and multi-modal trips, the plan sets the following TDM targets for 3-5 years after 100 Fore Street is fully occupied:

- *An 8% reduction in peak hour vehicle trips and parking demand for the site, per capita, and a 5% multi-modal rate increase*

Full occupancy of 100 Fore Street is expected to take approximately 16 months to complete and these targets will need to be reassessed after the first full year of occupancy of all tenant spaces.

100 Fore Street Site

- 3 acre mixed-use urban infill site on the Eastern Waterfront
- Office tenant A: 39,639 ft^2; ~125 employees
- Office tenant B: 43,513 ft^2; ~175 employees
- Retail tenant, east side of building: 1291 ft^2;
- Retail tenant, west side of building: 2420 ft^2;
- Private fitness center in remaining portion of existing building: 9,052 ft^2;

In addition to initial 15% shared-use and 12.8% existing multi-modal rate reductions within trip generation and parking projections, the TDM Plan sets the following targets:

- ***Trip & parking reduction target:*** a further 8% reduction per capita of employees within 5 years after full occupancy - resulting from TDM program
- ***Multi-modal target:*** a further 5% increase in employee and visitor trips via transit, carpooling or vanpooling, by bicycle & on foot within 3-5 years after full occupancy
- Will reassess targets at end of year one of full occupancy at 100 Fore

Cushman Transportation Consulting, LLC, 94 Beckett Street, 2nd Floor, Portland, ME 04101
Tel: (207) 200-1910 E-mail: sarah@sarahcushman.com www.sarahcushman.com

B. Property Description & Transportation Context

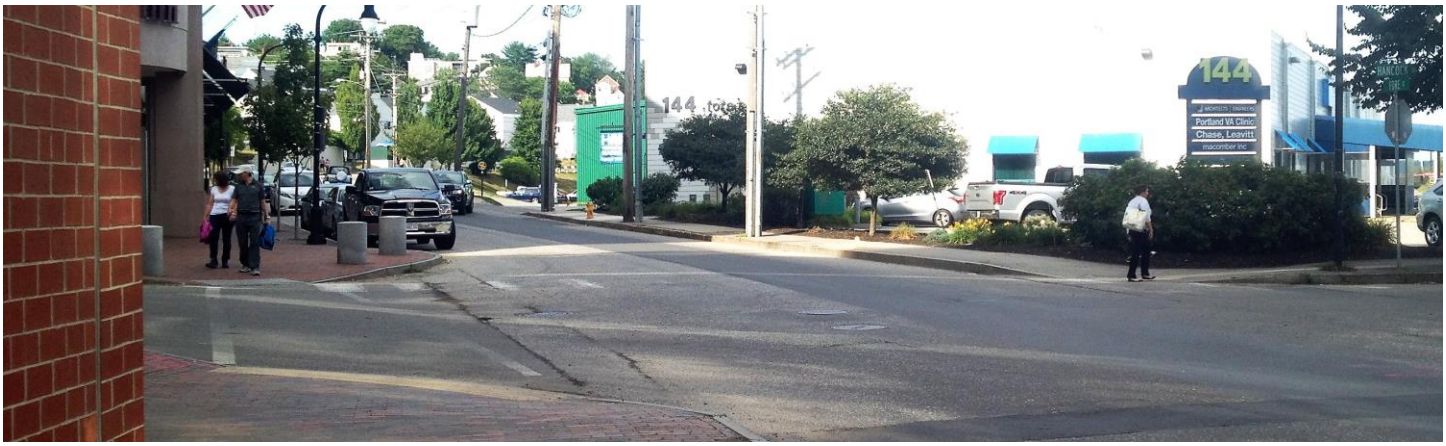
Historically, the Eastern Waterfront has been a vital part of the economic life of the City of Portland, connecting local and distant markets by sea and rail. The multi-use nature of 100 Fore Street forms part of the new generation of the commercial vibrancy in the area.



Grand Trunk Station at Fore & India

100 Fore is located in the B6 zone and has always been home to a diverse mix of uses. The area is seeing an overall rebirth with in-fill development of residential housing, increased public access to the water, passenger boat service, businesses, hotels and restaurants.

This site on Fore Street is uniquely situated on a steep slope at the bottom of the Eastern Promenade, across from Mountfort Street, and adjacent to 58 and 144 Fore Street. The parcel forms part of the renewed street and pedestrian connectivity in the area, as it proposes facilitating both access to the Thames Street extension on the east side and also retains right of way for the proposed Mountfort Street extension on the west side.



The 100 Fore Street project supports the mixed-use, urban form, and transportation demand management objectives of a number of Portland studies and plans, including:

- the City's *Master Plan for the Redevelopment of the Eastern Waterfront* (2002, amended 2006)
- the 2014 Urban Land Institute Advisory Services Panel Report *Waterfronts of Portland and South Portland, Maine: Regional Strategies for Creating Resilient Waterfronts*
- the 2017 Portland Comprehensive Plan, *Portland's Plan 2030*
- the 2017 *City of Portland Parking Study for the Eastern Waterfront & Downtown*

> *The Master Plan envisions new development in the area to be an amenity and an asset to neighborhood residents, the greater City, and the visiting public.*
>
> *-Master Plan for the Redevelopment of the Eastern Waterfront*

Parking Management

Surface parking's impervious surfaces are another major contributor to stormwater runoff quantity and detrimental water quality in receiving bodies—especially of concern with economically vulnerable fisheries. Development should be designed to reduce the impact of surface flow across Commercial Street and to mitigate effects on landside structures.

Recommendations

- Identify opportunity sites that, once relieved of surface parking, can provide resilient structures or site development strategies that mitigate surface flow.
- To relieve waterfront sites of surface parking, develop comprehensive program to manage all parking resources as a system that includes on-street parking and all public and private garages.
- Periodically update and report actual parking utilization data. Align with transportation demand management planning and commuter-trip-reduction programs.
- Develop broad-based community support for enacting ordinances and pricing that encourage car sharing and other parking requirements in public and private development.

2014 ULI Report on Resilient Portland & South Portland Waterfronts

POLICY GUIDE:
TRANSPORTATION

LOCAL GOALS

WE WILL:

Promote multi-modal accessibility, enabling residents and visitors of all ages and abilities to participate fully in the social and economic life of the community.

Support livability by improving the quality of life in neighborhoods and improving the public health of residents.

Support sustainability by reducing energy consumption, greenhouse gas emissions, and stormwater impacts.

Support economic vitality by ensuring the efficient movement of goods, services, and people.

2017 Portland Comprehensive Plan

The site is pedestrian and bicycle-friendly, located within the strong sidewalk network and lower-speed street grid of the Portland peninsula. It's also near the terminus of the Eastern Promenade multi-use path, a pivotal link in Portland's alternate transportation system. Tenant employees and site visitors living on most parts of the Peninsula will be within comfortable walking distance. Those tenant employees within a five-mile commute distance can also easily bike to work, especially as bicycle networks in Portland, South Portland and Falmouth continue to improve.



From a public transportation perspective the project is within walking distance of several METRO routes that stop at Congress and India Streets: the Route 1 that traverses the peninsula and connects with the Portland Transportation Center, the crosstown Routes 9A and 9B to off-peninsula neighborhoods and outer arterial streets, the Route 7 to and from Falmouth, and the Breez with service to Yarmouth, Freeport and Brunswick. The site is also within walking distance of all South Portland Bus routes via the stops at Fore and Union Streets.

Portland and local transit providers have long eyed improved transit connections to the Eastern Waterfront from other transportation nodes across the city, including the Portland Transportation Center and the heart of downtown – where a number of METRO routes, the Lakes Region Explorer and Shuttlebus-ZOOM services terminate. These routes are also within walking distance of the new site. However, closer access to transit would likely enable increased ridership by 100 Fore tenant employees and visitors.

Two recent examples offering transit improvement recommendations for the waterfront are the 2015 *Portland "Hub Link" Feasibility Study* and the 2017 *City of Portland Parking Study for the Eastern Waterfront & Downtown.* City management has also expressed interest in serving as a test site for an automated Olli bus between the Portland Transportation Center, downtown and the waterfront.

With the advent of the O Hancock Street (WEX) building, 86 Newbury Street (the Shipyard Redevelopment) and the eventual 58 Fore Street complex, additional discussions have arisen about possible public-private collaboration to bring transit into the Eastern Waterfront, beyond the METRO peninsula Route 8 on India Street and the routes that serve Congress at India. 100 Fore Street plans to join these discussions with METRO as well, to benefit improved public transportation options for tenant employees and the general public.

In terms of shared mobility, the use of transportation network companies (TNCs) such as Uber and Lyft has grown substantially. The 2017 *Parking Study* suggested the use of TNCs as an interim solution for companies like Vet's First Choice and WEX, for employees to access transit routes not within close walking distance. A TNC trip does not reduce traffic congestion, unless users are carpooling; however, it does reduce parking demand. In addition, a UhaulCarshare vehicle is located within four blocks of the site. A tenant carshare account can be useful for employee trips during the work day that require a vehicle.



We recommend continued pursuance of the following [transit] goals:

- *Increase the peak period frequency of key Peninsula routes to 10-20 min headways*
- *Provide a direct link between the Portland Transportation Center and Downtown/ Waterfront. As development on the Eastern Waterfront progresses, service should extend there as well.*
- *Use signal prioritization and other techniques (exclusive lanes perhaps) to help move buses through congested areas.*

…Additionally, we recommend the consideration of a downtown circulator route specifically meant to transport riders between the Waterfront and Cumberland Avenue in a loop.

- 2017 City of Portland Parking Study for the Eastern Waterfront & Downtown



Census commute data for employees originating in nearby communities with access to transit is still a bit behind the curve, in terms of showing the more recent results of:

- the Lakes Region Explorer service from Bridgton, Naples, Raymond and Windham
- the METRO Breez with service from Brunswick, Freeport and Yarmouth
- and the Husky Line express bus service from Gorham that just launched, with associated improved frequency of service from Westbrook and on Brighton Avenue.





In addition, the delivery earlier this year of 11 new buses for the METRO fleet has also been a boon for local transit-using employees. These each have Wi-Fi access, in-seat USB ports and space for three bicycles.



Meanwhile, the above mentioned other development projects in the area, including 100 Fore, have spurred the City of Portland to work to unify its methodology for handling traffic and parking, through a district-wide Traffic Movement Permit.

This growth has also enhanced the amenities surrounding 100 Fore Street and these provide an attractive dual-purpose trip for tenant employees and site visitors who do end up driving to the Eastern Waterfront. For example, the on-site private fitness center will serve nearby employees. Other instances include: walking to run errands at neighboring businesses, having lunch meetings with colleagues at local restaurants, meeting up with family and friends for after-hours events downtown, and exercising on the Eastern Prom Trail. These internally captured trips represent no net new trip generation or parking demand beyond the original trip to work or a 100 Fore retailer.



C. 100 Fore Street's TDM Coordination

Highly successful TDM programs share three vital characteristics: (1) they are dynamic: piloting strategies, assessing impacts, and modifying tactics as needed; (2) they are rigorously supported and monitored by local governing bodies, in this case, the City of Portland; and (3) they are managed by committed and enthusiastic staff or consultants who are responsible for overseeing, promoting and sustaining the program.

100 Fore Street, LLC is committed to reducing drive-alone employee and visitor automobile trips, improving multi-modal safety, and easing traffic congestion and area parking demand near 100 Fore through its TDM efforts. As such, the developer has designated Sarah Cushman of Cushman Transportation Consulting, LLC (CTC) to serve as the initial TDM Coordinator for 100 Fore Street. The Coordinator's contact information is: sarah@sarahcushman.com, (207) 200-1910.

The 100 Fore St. TDM Coordinator is responsible for:

- Ensuring strategic parking management by UPP and monitoring tenant and visitor parking usage
- Coordinating site and tenant TDM policies and incentives, such as parking cash out
- Encouraging greater use of preferred modes – walking, bicycling, carpooling and taking bus or rail transit - through central online platform, social media and site-wide promotion
- Overseeing/conducting surveying of tenant employees
- Overseeing annual site parking and traffic observations
- Filing annual reports and updating the TDM plan with the City as needed
- Exploration of additional TDM strategies, as needed

CTC is charged with coordinating the TDM plan implementation and monitoring and making any needed changes. The TDM Coordinator will also convene a site TDM Committee that includes an employee representative from each tenant. This will assist with landlord-tenant communication, TDM education and marketing, and implementation of the site's parking management and tenant parking cash out/transit-vanpool federal benefit provisions.

Acknowledging that roles and responsibilities change over time in any position, CTC will use the first few months of TDM implementation to enumerate the TDM Coordinator's responsibilities in detail for any subsequent staff or consultant to uphold the responsibility of the position. Should 100 Fore Street eventually hire a different TDM Coordinator, the building owner will retain the services of a TDM consultant to review initiatives, problem-solve and develop new strategies if and when necessary.

D. Trip Generation and Parking Demand Projections and Targets

100 Fore Street, LLC has hired Cushman Transportation Consulting, LLC (CTC) and Traffic Solutions to assist with its TDM planning process. CTC has conducted recent research on TDM programs at evolving, multifaceted development sites similar to 100 Fore, 82 Hanover Street and Thompson's Point (e.g., in California and Northern Virginia) – including aspects of setting and managing TDM targets. This outreach informs the following trip reduction, parking reduction and multi-modal goals.

Projected Trip Generation & Parking Demand

On behalf of 100 Fore, Traffic Solutions created ITE trip generation and parking demand projections and conducted additional local traffic and parking studies to assess the potential impact of 100 Fore's redevelopment. The projections include an initial 15% shared-use reduction in trips for people who will visit multiple tenants at or near the site during one outing, as well as a 12.8% reduction for the number of people who would use non drive-alone modes of transportation to reach the site under current conditions (pre-TDM implementation). This percentage was set in consultation with the City's Traffic Consultant.

Accordingly, the proposed 100 Fore Street project can be expected to generate approximately 152 trips in the AM peak hour and 159 trips during the PM peak hour. Per the parking demand projections analysis, the average peak hourly parking demand for the site for a typical weekday is expected to be 218 spaces.

The proposed site includes 539 garage parking spaces and 18 surface spaces, which 100 Fore Street, LLC will own and have Unified Parking Partners manage for use by tenants and the general public.

Trip Reduction Target

In addition to the initial 15% shared-use and 12.8% existing multi-modal rate reductions in projected trips to the site - and given the multi-modal accessibility of 100 Fore Street – the building's TDM efforts should enable a further 8% reduction in employee and visitor trips by the end of 3-5 years, i.e., 12 weekday morning peak trips and 13 weekday evening peak trips. The TDM team plans to revisit this reduction target after the first full year of operations at 100 Fore.

Projections & Targets

- ***Trip reduction target:*** In addition to initial 15% shared-use and 12.8% existing multi-modal rate reduction within the trip generation projections, a further 8% reduction in trips over first 3-5 years after full occupancy resulting from TDM program; 12 weekday morning peak trips, 13 weekday evening peak trips
- ***Parking reduction target:*** In addition to initial 15% shared-use and 12.8% existing multi-modal rate reduction within the parking demand projections, a further 8% TDM-related reduction in average peak hourly parking demand over first 3-5 years after full occupancy; 17 spaces
- ***Multi-modal target:*** In addition to 12.8% existing multi-modal rate, a further 7.2% increase in tenant employee and visitor trips via transit, carpooling or vanpooling, by bicycle & on foot within 3-5 years after full occupancy – a total 20% multimodal rate
- Will reassess targets at end of year one of 100 Fore Street occupancy

Parking Reduction Target

In addition to the initial 15% shared-use and 12.8% existing multi-modal rate reductions to the parking demand projections for the site, and with assertive parking management and implementation of associated TDM strategies and incentives, a further achievable parking demand reduction is 8% by the end of 3-5 years; i.e., 17 spaces. The parking demand target will also be revisited after 100 Fore has been in operation for a year.

Multi-Modal Target

100 Fore is setting an overall target of 20% of employees and visitors making multi-modal trips to the site, by 3-5 years after full occupancy. That is, giving the estimated existing multi-modal rate of 12.8%, this would be an additional 7.2% increase in employees and visitors who reach the site via transit, carpooling or vanpooling, by bicycle, on foot or through some combination of these modes. This target is different from the trip and parking reduction targets above because, with the diversity in the timing of work and retail uses occurring at 100 Fore, a number of these trips are likely to be outside of the morning and evening peak periods.

From other TDM experiments in North America, it is also clear that individuals' use of various alternate modes shift over time as different employees and visitors come and go. For example, an employee who uses transit might move to a different job off-site or a commuter who walks might switch to bicycling. In another instance, an employee who in the past has biked to the site may begin to take transit or carpool more with the needs of a growing family. Therefore, it seems most useful for 100 Fore's TDM efforts to address the specific needs of transit users, carpoolers, bicyclists and walkers and set an overarching multi-modal trip target for the site.

100 Fore plans to closely monitor existing trends to attain a reasonable mode-shift goal over time.





E. Trip and Parking Reduction Strategies

In the table beginning on the page that follows, 100 Fore Street, LLC proposes a number of best-practice and sensible parking and trip reduction strategies for its TDM Plan. These are based on understanding of the site's transportation context, future tenant employees and site visitors, and the usefulness of various TDM efforts. For example, strategically managed parking will produce the strongest results for reducing single-occupancy vehicle trips to the site.

The highest priority items for 100 Fore Street's TDM program success are:

- *Strategic parking management* (parking unbundled from leases, managed by Unified Parking Partners, and tenants required to offer either parking cash out for employees or charge employees for parking)
- *For those tenants offering parking cash out: tax-free federal transit or vanpool benefit for employees as one option*
- *Social marketing work to establish commuting another way as the social norm*

In addition, 100 Fore acknowledges the various needs of different multi-modal commuters. For instance, employees who walk to work or bicycle or carpool with children are more able to do so if they have on-site, secure storage for larger commuting gear. Moreover, employees will require tangible financial incentives such parking cash-out to help encourage them to experiment with other ways of getting to work.

Another critical component for the success of 100 Fore's TDM Plan is a carefully thought-out marketing effort that regularly engages tenant employees regarding preferred modes of transportation and provides easily accessible information. This work also builds their companies' TDM cultures and the sense of multi-modal travel as the social norm. Within this TDM Plan, 100 Fore has begun designing a marketing strategy that complements other area Portland TDM work to promote walking, bicycling, rideshare, public transit and alternate work arrangements.

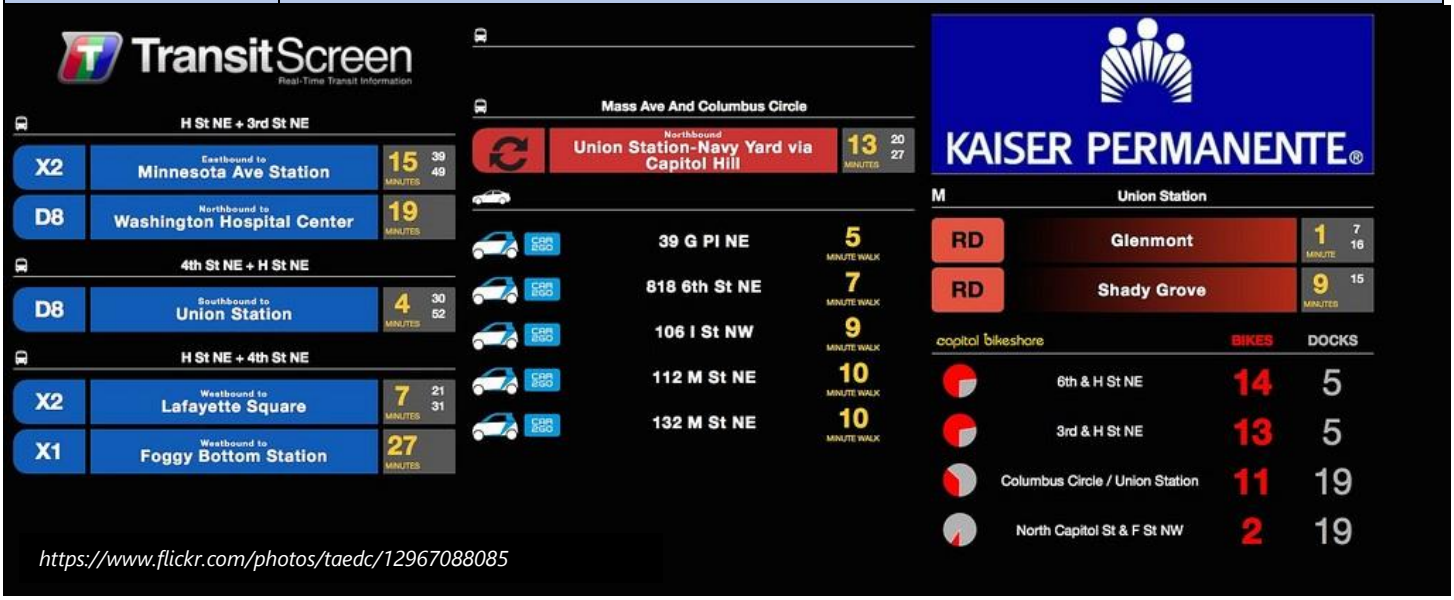
Finally, Greater Portland Council of Governments and the City of Portland are reexamining the need for an area Transportation Management Association (TMA) to benefit private sector employers. TMAs are generally public-private entities that assist employers with TDM implementation and monitoring, advocate for improved transit and act as brokers for services such as vanpools and shuttles. 100 Fore Street plans to support the development of a TMA, if found to be feasible, and participate as a member.

Infrastructure	
Transit Access	Transit Screen in main lobby with live-time transit service information for routes near the site
	Transit passes available for purchase on-site
	Work with City of Portland and METRO regarding possible expansion of public transportation to the Eastern Waterfront
Pedestrian Access	Reconstruction of street sidewalk segments abutting development
	ADA barrier-free ramp improvements on Fore Street at the proposed Fore-to-Thames Street connector and the Driveway #1 entrance
	Construction of new crosswalk at Fore & Mountfort Street
	Street and building lighting improvements to improve sidewalk illumination
	Secure storage room in garage for larger commute gear, e.g.: strollers, islander handcarts, etc.
	On-site showers and clothing lockers accessible at fitness center
Bicycle Access	35 bicycle parking spaces at five different on-street/at entrance locations on site
	Secure storage room in garage for for regular bicycles and larger-size or heavier bike commuting set-ups, such as: cargo bicycles, electric bikes and bicycles with trailers or child bicycling attachments
	On-site showers and clothing lockers accessible at fitness center
	One bicycle repair station located in secure bike parking room
	Committed to meeting a higher demand for on-street bike parking if needed
Shared Mobility	Secure storage on 1st floor for larger commuting gear, e.g.: car seats
	UhaulCarshare vehicle within 6 minute walk; may explore additional on-street carshare vehicle(s) to serve 100 Fore and other new development on Eastern Waterfront
Electric Vehicle Charging	At least one electric car charging station will be provided in the parking garage
Lease Agreements	Inclusion of language in lease agreements concerning site TDM requirements, associated fees and benefits to tenants and their employees
General Contribution to Area Transportation Improvements	Through the City's evolving MaineDOT district-wide Traffic Movement Permit process for the combined sites of 100 Fore, 0 Hancock and 86 Newbury Streets – and/or the City's new impact fee program - the developer will make a to-be-determined financial contribution for the site, for city transportation improvements within the commute shed of the project.

Employee Incentives	
Parking Pricing/ Management/ Cash Out/ Incentives	Parking unbundled from tenant leases; Managed by Unified Parking Partners
	Tenants using site parking spaces required to follow traffic management plan for staggered entrance and exit
	Tenants who provide a "free" parking benefit to employees are required to offer them a $100 monthly parking cash out option - in lieu of a $160 parking space (a $60/month savings to the employers); *to be executed in one of three ways:* • *Straight Cash Benefit:* $90 in cash paid to employee, with $10 remaining to cover payroll tax for employer and employee, because these funds are regarded as income. This money can be used by the employee for any purpose; however it can also be considered funds to support carpooling (e.g., vehicle maintenance or gas money), walking (e.g., gear or shoe purchase) or biking (e.g., bike shop maintenance) • *$100 Tax-Free Transit or Vanpool Benefit:* e.g., a monthly pass for the ZOOM bus from Saco is $120 per month – so the parking cash out would cover most of that; neither the employer nor the employee are required to pay tax on those funds under the Federal Transit/Vanpool Benefit • *Mixed Transit/Vanpool Benefit & Cash:* For those who pay less for their transit passes (e.g. METRO is $45 per month), the employee can take part of the cash out funds tax-free for the pass, and then the remaining funds as cash (deducting what you need to cover payroll tax)
	Or as an alternative to parking cash out option above, tenant is required to: • Charge employees full monthly amount for parking space if driving alone • Offer carpooling or vanpooling employees at least a 30% discounted parking rate and possibly Preferential Parking spaces (those sharing rides would participate in the Preferential Parking program through GO MAINE: carpoolers receive special permits and are prioritized for parking spaces near entrances)
	In addition, tenant will provide a limited number of daily parking passes for occasional use by tenant employees who are primarily multi-modal commuters; a reasonable maximum could be 20 passes per year or 2 passes per month.
Transit Subsidies/ Incentives	Site registration with GO MAINE for rewards for transit riders and to provide access to Emergency Ride Home (ERH) benefit
	Tenants encouraged to offer one-time financial incentives to start using transit
Carpool Subsidies/ Incentives	Registration with GO MAINE for carpooling matching, rewards and access to ERH
	Tenants encouraged to offer one-time financial incentives to start new carpool or vanpool or to recruit new carpool/vanpool members
Bicycle-Pedestrian Subsidies	Registration with GO MAINE for rewards and Emergency Ride Home benefit
	Tenants encouraged to offer: • one annual footwear purchase for pedestrian commuters • one annual bicycle maintenance visit to local bike shop for bicycle commuting employees • reimbursement for employees for bicycle safety courses • purchase of Bicycle Benefits memberships for bicycle commuting employees

Shared Mobility Subsidies	Tenants encouraged to: • offer full or partial subsidy for multi-modal employees who need to use UhaulCarshare or TNCs (Uber/Lyft) during work day • offer monthly employee bikeshare memberships, when/if bikeshare starts in Portland • explore a customized Transportation Network Company (TNC - e.g., Lyft & Uber) solution for employees to access transit routes elsewhere on the peninsula
Flexible Work	Tenants encouraged to: • have written policy for flextime, telecommuting & condensed work shifts • persuade all possible staff to avoid A.M. & P.M. peak travel times (7-9 a.m. and 4-6 p.m.)
Targeted Promotions	1st year: monthly raffle for multi-modal tenant employees with benefits such as vacation time, gift cards, etc.
	Thereafter, campaigns 1-2 times per year, tied to regional and national events like Way 2 GO MAINE and National Bike Month - and offering similar rewards;
Information	
Education for Travel Choice	Under lease agreement, tenants required to pay annual per-square-foot fee to support 100 Fore Street site-wide TDM promotion and monitoring efforts
	TDM orientation and benefits packets for relocating employees and new hires
	One-on-one consultations or commute coaching available to explore employee options upon site opening and offered at least once annually, thereafter
	Transit Screen type monitor located in lobby with looping slides, offering information on: • all TDM benefits available to employees, including tenant company policies • links to current maps, routes, and schedules for public transit routes near the site • live-time transit info from Southern Maine Transit Tracker • information on GO MAINE ride-matching and Emergency Ride Home benefit • Portland Trails map and Greater Portland Bike Map to show walk, bicycle & trail routes to and near site • list of facilities available for bicyclists, carpoolers, pedestrians, transit riders and vanpoolers • list of other available transportation options in the area • contact information for TDM Coordinator
	Active "Optimize Your Commute" web page on 100 Fore website. Tenants will link to from their own site for employee use. Page includes all the information above and links to each resource.
	Building TDM Committee with tenant representatives to assist with communication
	At least quarterly communications with tenant employees regarding commuting benefits available – e.g. through email, e-newsletter, announcements, posters, etc.
	Required employee and visitor transportation surveys and reporting to City will also serve as education tool
	The above commuter challenges and incentive campaigns
	Use company social media to build social proof of others doing the desired TDM actions (with posts from employees taking action – e.g., posting a photo of taking the bus to work or the morning carpool) - vs. just likes or retweets of the idea of using preferred alternate modes

Promotion of Alternate Modes	At least once per quarter: recognize individual tenant employees and any visitors who reduce the traffic impact of the site through 100 Fore and tenant company social media, door posters, newsletter, email or other announcements.
	Consider applying for Best Sites status - a national qualification that no Maine multi-use site has yet attained
	Within two years of full site occupancy, do Enterprise vanpool zip code analysis of employees (and possibly collaborate with other nearby redeveloped sites with similar employee pools, such as WEX) to assess potential vanpools and do outreach to employers regarding possibilities



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F. Plan for Monitoring, Data Collection and Reporting

Recognizing that the implementation of a TDM Plan is a dynamic process, the 100 Fore Street TDM Coordinator will collaborate with the O Hancock Street TDM Coordinator and work with the City to monitor the effectiveness of 100 Fore's TDM Plan components - and to assess whether the site is achieving the trip and parking reduction targets listed above. 100 Fore will work with tenants to evaluate the parking disincentives and any subsidies for preferred modes and make improvements. Another important piece will be to determine the flexibility of employees and retail visitors to utilize various travel modes to access the site.

100 Fore Street will also explore possible use of the national TRIMMS model (Trip Reduction Impacts of Mobility Management Strategies). This would be helpful for internal assessment, to estimate the impacts of the various transportation demand initiatives and provide a program cost effectiveness assessment, including the net program benefit and a benefit-to-cost ratio analysis.

Surveying & Monitoring

- Employee and visitor surveys once annually for first 3 years, then every two years thereafter
- Collect parking usage and cash-out data to cross-reference with the employee and any visitor surveys
- Reassess parking and trip monitoring at 1 year mark
- Track tenant employees' use of parking cash out, transit/vanpool benefit and any multi-modal subsidies
- Communication with India Street and Munjoy Hill Neighborhood Associations
- Annual report to City

The TDM Coordinator will conduct annual tenant employee surveys that provide quantitative data (e.g., trip, parking and mode split) and qualitative data (e.g., perception of 100 Fore's alternate transportation access and TDM initiatives). Similarly, retail tenants will be encouraged to do a point-of-sale survey of their visitors. 100 Fore Street will carry out these surveys once annually for the first three years of full occupancy and then every two years thereafter. The data collection and surveys will produce comparable data from year to year and be available for compilation with other sites' travel data by a third party, such as the City. The following will be included in the monitoring assessment.

Employee Surveys & Parking Usage

The survey will be developed in consultation with the city's TDM manager and conform to overall city TDM modeling and planning. Survey questions will include:

- Employee's zip code of residence
- Mode(s) of travel to and from work and any use of alternate work arrangements (e.g. telecommuting)
- If parking personal vehicle, where
- Type of participation in TDM program and/or use of any employee TDM benefits, including parking cash out and the federal transit/vanpool benefit
- Preferences, barriers or concerns with modes of travel
- TDM marketing effectiveness
- To help report any business benefits from the tenant's TDM efforts, the survey may also collect data regarding: any changes in employee satisfaction with travel options, changes in levels of stress, impacts on employee turnover/absenteeism, increases in savings due to participation in subsidies, etc.
- Space to add comments



Visitor Surveys

Similar to the employee survey, 100 Fore Street will consult the city's TDM manager and ensure the retail visitor survey is appropriate for the plan's context and needs. The two retail sites will provide opportunities for visitors to complete the survey during their visit, e.g., providing the survey at the point of purchase. Visitor survey questions will likely include:

- Visitor's zip code of residence
- Mode of travel to and from the site
- If by car, specify as a driver or a passenger
- If driver, ascertain how many passengers and parking location
- Check boxes of specific preferences, barriers or concerns with using other modes
- Space to add comments

Note: the use of these survey tools will also assist 100 Fore Street and tenant employers with their TDM education efforts. That is, the questions themselves help people think differently about their transportation behavior. The surveys will also provide a reminder and link to 100 Fore Street's online transportation page for further information about options.

The TDM Coordinator will also form and maintain a relationship with the India Street and Munjoy Hill Neighborhood Associations, offering to discuss any neighborhood parking or traffic concerns directly and to

attend a neighborhood association meeting once a year to learn more from neighbors and share information about 100 Fore Street's TDM efforts and perspectives.

Parking Usage

Using the site's parking data, 100 Fore Street will produce a summary of tenant employee and visitor parking usage.

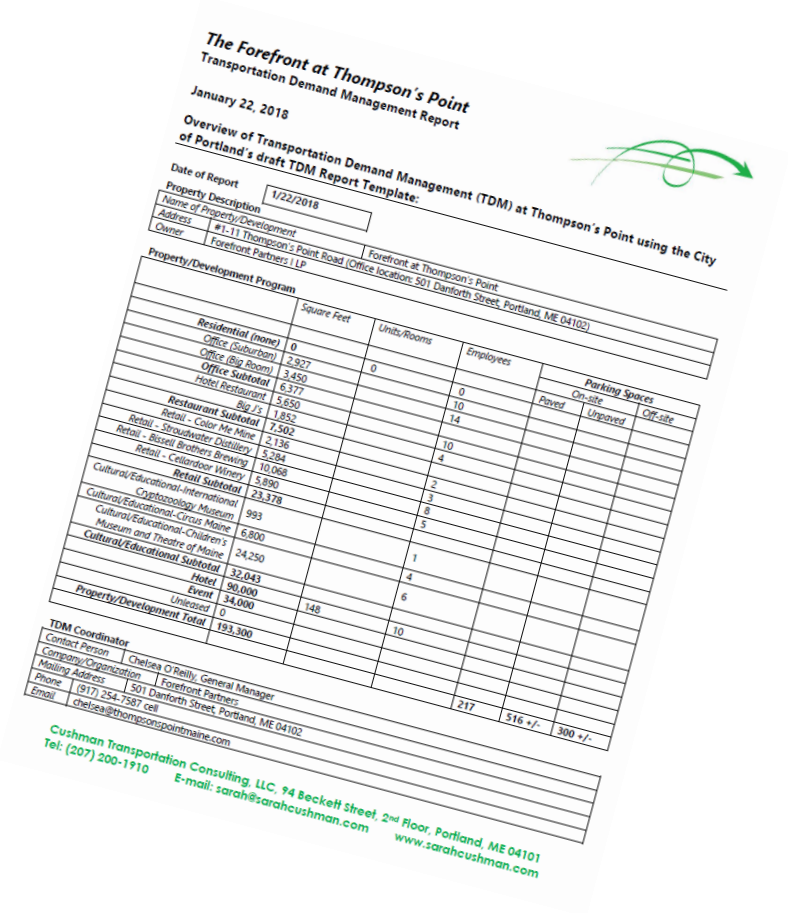
Use of Parking Cash Out, Federal Transit/Vanpool Benefit and Other Multi-Modal Subsidies

The TDM Coordinator will monitor tenants' and tenant employees' use of the parking cash-out program and the tax-free federal transit/vanpool benefit. In addition, the Coordinator will track any other multi-modal subsidies tenants are offering and the number of employees utilizing these different incentives. The program will also tally the number of company employees who are members of GO MAINE, with access to the Emergency Ride Home Benefit. If any tenants engage with a future bikeshare operation, UhaulCarShare or a transportation network company, the coordinator will assess that usage as well.

Annual Report

The TDM Coordinator will then produce an annual TDM Report to meet the City's monitoring requirements. The report will include:

a. the above employee and any visitor survey results
b. parking data
c. use of parking cash out and any other TDM incentives/subsidies
d. details of that year's TDM operations – including management, strategies, marketing and any new infrastructure development
e. lessons learned and any changes in the TDM plan during the year
f. plans for the following year



The Forefront at Thompson's Point
Transportation Demand Management Report
January 22, 2018
Overview of Transportation Demand Management (TDM) at Thompson's Point using the City of Portland's draft TDM Report Template:

Date of Report	1/22/2018
Property Description	
Name of Property/Development	Forefront at Thompson's Point
Address	#1-11 Thompson's Point Road (Office location: 501 Danforth Street, Portland, ME 04102)
Owner	Forefront Partners I LP

Property/Development Program

	Square Feet	Units/Rooms	Employees	Parking Spaces: On-site Paved	On-site Unpaved	Off-site
Residential (none)	0		0			
Office (Suburban)	2,927	0				
Office (Big Room)	3,450		0			
Office Subtotal	6,377					
Hotel Restaurant	5,650		10			
Big J's	1,852		14			
Restaurant Subtotal	7,502					
Retail - Color Me Mine	2,136		10			
Retail - Stroudwater Distillery	5,284		4			
Retail - Bissell Brothers Brewing	10,068					
Retail - Cellardoor Winter	5,890		2			
Retail Subtotal	23,378		3			
Cultural/Educational-International Cryptozoology Museum	993		8			
Cultural/Educational-Circus Maine	6,800		5			
Cultural/Educational-Children's Museum and Theatre of Maine	24,250		1			
Cultural/Educational Subtotal	32,043		4			
Hotel	90,000		6			
Event	34,000					
Unleased	0	148	10			
Property/Development Total	193,300					
			217	516 +/-		300 +/-

TDM Coordinator

Contact Person	Chelsea O'Reilly, General Manager
Company/Organization	Forefront Partners
Mailing Address	501 Danforth Street, Portland, ME 04102
Phone	(917) 254-7587 cell
Email	chelsea@thompsonspointmaine.com

Cushman Transportation Consulting, LLC, 94 Beckett Street, 2nd Floor, Portland, ME 04101
Tel: (207) 200-1910 E-mail: sarah@sarahcushman.com www.sarahcushman.com

Att. V

TRAFFIC IMPACT STUDY

FOR

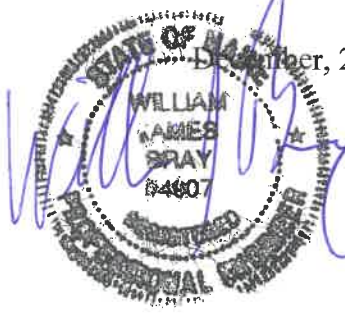
PROPOSED

"100 Fore Street"

Commercial Development

Prepared For: 100 Fore Street, LLC
Prepared By: William J. Bray, P.E.

December, 2018



INTRODUCTION

100 Fore Street, LLC is proposing to construct an 82,872 square foot office building and a multi-level parking garage that includes 3,622 square feet of retail space at 100 Fore Street in the City of Portland. The garage structure will be three floors with 539 parking spaces. The subject property is identified as Lot 10 on City Tax Map 19, Block A.

Existing uses on the 2.97-acre development site include a 30,000 square foot single level multi-tenant retail/office building and a surface parking lot with a total of 136 spaces. The site currently is accessed from two driveway openings off Fore Street located at each end of the property. The current development plan demolishes the majority of the existing building displacing all of the existing building tenants. Approximately, 9,000sf of the existing building will be re-developed as a private fitness facility for tenants of the proposed office building.

The new 539 space three (3) level parking garage will require three access locations since each parking deck will require independent access as there will be no interior access ramps. The ground level lot will be accessed from a new driveway located just west and opposite the Mountfort Street intersection along Fore Street. The first and second level decks will be accessed from the site's proposed easterly driveway. The easterly driveway will be constructed to satisfy City street standards as it may ultimately be extended to cross City land to the south and connect to the proposed Thames Street Extension, tentatively scheduled for construction by the City of Portland in 2019 or thereabout. It is expected that Unified Parking Partners or a similar operator will actively manage the garage operations including directional signage and related issues. The proposed office tenant is expected to lease spaces in the garage and spaces will also be open for public parking. Per section 14-332, the parking requirements for the 82,872sf office will be 215 spaces.

EXISTING DESIGN HOUR TRAFFIC

Manual turning movement counts were conducted at Fore Street/Hancock Street and Fore Street/Mountfort Street intersections late September, early October 2018. All vehicle traffic entering each intersection was counted in 15-minute intervals between 7:00 and 9:00 AM and, again, between 3:00 and 6:00 PM. From a summary of the data, a peak hour of traffic was determined at each intersection. The "*morning*" peak hour occurs between 7:45 and 8:45 AM at both locations and the "*evening*" peak hour falls between 4:30 and 5:30 PM at Fore and Hancock Streets and from 4:45 to 5:45 PM at Fore and Mountfort Streets (Copies of the traffic count summary reports are attached).

Traffic data collected during the months of September/October requires an adjustment to reflect "*peak*" travel conditions during the summer months of July and August. MaineDOT provides factors for adjusting traffic data collected during other periods of time. MaineDOT utilizes highway classifications of I, II, or III for all State and Local roadways. Group I roadways are defined as urban roadways or those roads that typically see commuter traffic and experience little fluctuation from week to week throughout the year. Group II roadways or arterial roads are those that see a combination of commuter and recreational traffic and; therefore, experience moderate fluctuations during the year. Group III roads or recreational roadways are typically used for recreational purposes and experience significant seasonal fluctuations. MaineDOT has designated each street at both intersections Group I roadways, which requires the collected traffic data to be adjusted by a factor of approximately 1.07.

Figure 1 illustratively depicts the estimated 2018 Design Hour Traffic conditions at both study intersections.

FUTURE TRAFFIC

Annual Growth: The study has assumed that the proposed 100 Fore Street site will be constructed and occupied in 2019. To approximate future 2019 traffic conditions at the study intersection, the 2018 Design Hour Traffic values presented on Figure 1 were adjusted by an annual growth of 5.2% per year to estimate future 2019 design hour traffic conditions at the study intersections.

Figure 2 graphically presents the estimated 2019 design hour traffic volumes for the study intersections.

Other Development Traffic: Traffic generated by projects that have been approved by the Local Planning Board and/or the Maine Department of Transportation, yet are not opened, must be included in the estimate of pre-development traffic. Peak hour trips generated by the following projects were appropriately considered in developing an estimate of Other Development trips:

1. *Ocean Gateway Garage Addition*
2. *AC Hotel*
3. *62 India Street*
4. *20 Thames Street*
5. *cPort Credit Union*
6. *221 Congress Street*
7. *58 Fore Street*
8. *1 Hancock Street*
9. *Shipyard Re-Development*

Figure 3 provides an assignment of the Other Development trips through both study intersections.

2019 Pre-Development Traffic: 2019 Pre-Development traffic forecasts were prepared by combining the estimated 2019 design hour traffic volumes highlighted on Figure 2 with the Other Development traffic values displayed on Figure 3. Figure 4 presents the 2019 pre-development traffic forecasts for both study intersections.

SITE TRAFFIC

The proposed "100 Fore Street" project includes construction of an 82,872sf office building, 3,622sf of retail space and a 539-space parking structure. The proposed office/retail space and a portion of the parking spaces within the proposed garage will generate "*new*" vehicle trips during both peak commuter time periods. Each requires a separate process for estimating peak hour trip generation; both processes are defined in greater detail as follows:

1. **Proposed office/retail building-trip generation:** The Institute of Transportation Engineers **TRIP GENERATION** publication provides numerous land use categories and the average volume of trips generated by each.

   The following trip rates were used to calculate trip generation for the proposed office and retail space:

   Land Use #710 – General Office Building (82,872sf)
   AM Peak Hour Ln(T) = 0.80 Ln(X) + 1.55
   PM Peak Hour T = 1.12(X) + 78.81
   Land Use #714 – Specialty Retail (3,622sf)
   AM Peak Hour = 2.71trips/1,000sf floor area [(2)]
   PM Peak Hour = 2.71trips/1,000sf floor area

   NOTE: [(2)] The ITE publication doesn't provide a trip rate for the AM peak hour; the estimate of trip generation for this land-use in the "morning" peak hour is based upon the trip rate noted for the PM peak hour.

   Table 1, as follows, presents the estimated peak hour trip generation for the proposed 100 Fore Street office and retail space:

Table 1
100 Fore Street
Peak -Hour Trip Generation Estimates

Proposed Building Use	AM Peak Hour Trips	PM Peak Hour Trips
General Office	164 trips	172 trips
Specialty Retail	10 trips	10 trips
TOTAL Trips	**174 trips**	**182 trips**

The proposed office and retail space will generate a total of **170** trips during the "*morning*" peak hour and **181** vehicle trips in the "*evening*" peak hour.

Other Modes Trip Reduction: Employees of the office and retail building are expected to utilize other modes of transportation traveling to/from the proposed new site at 100 Fore Street. These other transportation modes include: transit, ridesharing, bicycle travel or walking. Employee commute data obtained for a number of communities located in the Greater Portland Region suggests that approximately **12.8%** of the employees at the new office/retail site will travel to/from work utilizing other modes of transportation. The attached document defines the assumptions and data sources applied in calculating the percentage of employees using other modes of travel to/from work. Table 2, as follows, presents the adjusted peak hour trip generated by the proposed office and retail space within the "100 Fore Street" development:

Table 2
Adjusted
Peak Hour Trip Generation

	AM Peak Hour	PM Peak Hour
Total Site Trip Generation	174 trips	182 trips
- Other Modes Adjustment	- 22	-23
Total Adjusted Peak Hour Trips	**152 trips**	**159 trips**

As presented in the previous table, the proposed "100 Fore Street" office and retail space is projected to generate a total of 152 trips in the AM peak hour and 159 trips during the PM peak hour.

Site Trip Distribution: The Institute of Transportation Engineers handbook provides the following directional distribution rates for an office building use:

LUC #710: General Office Building
AM Peak Hour = 88% enter/12% exit
PM Peak Hour = 17% enter/83% exit

Based upon the noted directional distribution patterns, 133 trips during the morning peak hour and 27 trips in the evening peak hour will enter the site and the remaining trips (19 AM trips and 132 PM trips) will exit the site.

Site Trip Assignment: Peak hour trips generated by the proposed office and retail space were assigned to the existing street system and the proposed driveway entrances to each deck of the parking garage based upon the following assumptions:

- A travel model that considers "*home to work*" travel information of an existing local office building was used in developing a projected travel model for the proposed 100 Fore Street site. The postal zip code data provided the following directional travel patterns:
  - Fore Street (West) – 52%
  - Fore Street (East) – 5%
  - Commercial Street – 23%
  - India Street – 5%
  - Mountfort Street – 15%
- Office and retail trips were assigned to either Level 2 or Level 1 in the parking garage. Tenants of the office and retail space will be assigned reserved spaces on both levels 1 and 2 in the garage structure, with the greatest majority (83%) assigned to level 2 and the remaining 17% level 1.
- The proposed connector road framing the eastern border of the 100 Fore Street site and providing access to levels 1 and 2 of the proposed parking garage will be extended by others to connect to the proposed extension of Thames Street.

Figure 5 presents the assignment of site trips through each study intersection for both peak hour time period.

2. **Proposed Parking Garage - Trip Generation:** The proposed office and retail tenants generate a peak parking demand of 218 parking spaces; the remaining 321 spaces within the 539-space garage will be used by other perspective tenants and/or transient parkers; their trip generation must be accounted for in forecasting the total trip generation of the proposed 100 Fore Street site.

   Trip generation for the balance of parking spaces within the 100 Fore Street garage was determined based upon peak hour parking utilization data provided by operators of the Ocean Gateway Parking Garage (OGPG). OGPG operators maintain a detailed log of all vehicles entering and exiting the garage during each hour of a typical day. Their data (a copy of is attached) shows between 8:00 and 9:00 AM a total of 234 vehicles, or approximately 33% of the garage capacity enters or exits the garage during the morning peak hour. In the PM peak hour, which falls between 5:00 and 6:00 PM, a total of 190 vehicles enter/exit the garage or about 27% of the garage capacity. Traffic Solutions assumes the balance of parking spaces within the proposed 100 Fore Street garage will generate a similar percentage of peak hour trips during each peak hour time period. Accordingly, it is estimated that the 321 parking spaces will generate a total of 106 spaces in the morning peak hour and 87 trips in the afternoon peak hour.

   Parking Garage-Trip Distribution: The following directional distribution patterns, obtained from the OGPG data, were used for distributing vehicle trips generated by the balance of site parking spaces:

   AM Peak Hour = 89% enter/11% exit
   PM Peak Hour = 14% enter/86% exit

Based upon the noted directional distribution patterns, 95 trips during the morning peak hour and 12 trips in the evening peak hour will enter the site and the remaining trips (11 AM trips and 75 PM trips) will exit the site.

Parking Garage - Trip Assignment: Peak hour trips generated by the balance of spaces in the parking garage (321 spaces) were assigned to the existing street system and the proposed driveway entrances to each deck of the parking garage based upon the following assumptions:

- A travel model that considers "*home to work*" travel information of an existing local office building was used in developing a projected travel model for the proposed 100 Fore Street site. The postal zip code data provided the following directional travel patterns:
  - Fore Street (West) – 52%
  - Fore Street (East) – 5%
  - Commercial Street – 23%
  - India Street – 5%
  - Mountfort Street – 15%
- Trips generated by the balance of parking spaces were assigned to either the ground level or remaining non-reserved spaces on level 1. The actual percentage applied were: 55% ground level and 45% level 1.
- The proposed connector road framing the eastern border of the 100 Fore Street site and providing access to levels 1 and 2 of the proposed parking garage will be extended by others to connect to the proposed extension of Thames Street.

Figure 6 presents the assignment of site trips generated by the surplus parking spaces within the 100 Fore Street garage through each study intersection during both peak hour time periods.

Combined Site Trips: Figure 7 illustratively presents the total peak hour trip generation of the proposed site by combining trips generated by the site building, highlighted on Figure 5, with trips generated by the balance of parking spaces within the proposed garage structure shown on Figure 6.

2019 POST-DEVELOPMENT TRAFFIC

2019 Post-Development traffic forecasts were developed for both study intersections, the proposed Connector Road intersection at Fore Street and the three garage entrance intersections by combining the 2019 Pre-development travel forecasts highlighted on Figure 4 with the total site generated trips on Figure 7. Figure 8 presents the 2019 Post-Development travel forecasts.

MOBILITY ANALYSIS

Intersection mobility is evaluated in terms of level of service (LOS) where "A" is very good with little delay and "F" represents very poor conditions. The following table summarizes the relationship between delay and Level of Service for an unsignalized intersection:

Level of Service Criteria for Unsignalized Intersections

Level of Service	Total Control Delay (sec/veh.)
A	Up to 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	Greater than 50.0

The mobility (capacity) analysis was conducted utilizing Synchro and SimTraffic traffic simulation models. The capacity analysis was performed under forecast 2019 Post-development travel conditions at the following intersections:

1. Fore Street @ Hancock Street
2. Fore Street @ Mountfort Street
3. Fore Street @ Proposed Connector Road
4. Fore Street @ Proposed ground level entrance
5. Proposed Connector Road @ Proposed entrance to level 1
6. Proposed Connector Road @ Proposed entrance to level 2

The capacity analysis conducted for both locations 1 and 2 were based upon existing traffic control at both locations. The Fore Street/Hancock Street intersection operates with "*all-way*" STOP control, whereas, the Fore Street/Mountfort Street intersection was modeled with stop control on Mountfort Street only.

The traffic model developed for analyzing 2019 Post-development operations at the Fore Street/Ground Level Entrance intersection and the Fore Street/Proposed Connector Road intersection assumed stop control on both side street approaches and "*free-flow*" on both Fore Street approaches.

Assessing traffic operations at both proposed garage entrance intersections on the proposed connector road entailed establishing expected vehicle "*headway*" values and vehicle reservoir distances for both proposed garage entrances. The traffic assessment assumes both levels of parking in the garage will operate with a parking pass versus the more typical parking ticket commonly found at most public parking facilities. Vehicle "*headway*" values were determined based upon data obtained from the "Top of the Old Port" surface parking lot. The noted data would suggest an average vehicle "*headway*" value of 9.7 seconds. The 9.7 seconds compares favorably to published data used by the City of Irvin, California. To conservatively project expected vehicle delay and resulting vehicle queues the analysis was completed based upon a vehicle headway value of 15 seconds. The parking garage entrances have been designed providing vehicle reservoir distances greater than two vehicles at both garage levels 1 and 2.

Table 3, below, presents the results of the capacity analysis at each noted intersection for the 2019 Post-Development travel condition:

Table 3
Level of Service Summary
2019 Post-Development Conditions

	2019 Post-Development			
	AM Peak Hour		PM Peak Hour	
Intersection Approach	Delay (sec.)	LOS	Delay (sec.)	LOS
Fore Street @ Hancock Street				
- Fore Street NB	5 sec.	A	9 sec.	A
- Fore Street SB	4 sec.	A	7 sec.	A
- Hancock Street EB	7 sec.	A	6 sec.	A
- Hancock Street WB	7 sec.	A	7 sec.	A
- Overall Intersection	7 sec.	A	8 sec.	A

Fore Street @ Mountfort Street				
- Fore Street NB	1 sec.	A	1 sec.	A
- Fore Street SB	1 sec.	A	1 sec.	A
- Mountfort Street EB	9 sec.	A	9 sec.	A
- Overall Intersection	2 sec.	A	2 sec.	A
Fore Street @ Ground Level Entrance				
- Fore Street NB	2 sec.	A	2 sec.	A
- Fore Street SB	1 sec.	A	1 sec.	A
- Ground Level Entrance WB	9 sec.	A	9 sec.	A
- Overall Intersection	1 sec.	A	1 sec.	A
Fore Street @ Proposed Connector Road				
- Fore Street EB	1 sec.	A	1 sec.	A
- Fore Street WB	1 sec.	A	1 sec.	A
- Proposed Connector Road NB	6 sec.	A	8 sec.	A
- Overall Intersection	1 sec.	A	2 sec.	A
Proposed Connector Road @ Level 2 Entrance				
- Proposed Connector Road NB	3 sec.	A	8 sec.	A
- Proposed Connector Road SB	1 sec.	A	1 sec.	A
- Garage Level 2 Entrance EB	3 sec.	A	3 sec.	A
- Overall Intersection	1 sec.	A	4 sec.	A
Proposed Connector Road @ Level 1 Entrance				
- Proposed Connector Road NB	1 sec.	A	1 sec.	A
- Proposed Connector Road SB	1 sec.	A	1 sec.	A
- Garage Level 1 Entrance EB	2 sec.	A	2 sec.	A
- Overall Intersection	1 sec.	A	1 sec.	A

Each of the study intersections are projected to operate at Level of Service "A" conditions during both "peak" 2019 Post-development travel conditions. Level of Service "A" conditions represents the highest or "*best*" operating level of service.

VEHICLE QUEUE ASSESSMENT

Ninety-fifth (95%) percentile vehicle queues, an output of the detailed capacity analyses, were determined for both Level 1 and Level 2 garage entrance intersections with the proposed Connector Road. Additionally, vehicle queue distances were determined for the proposed Connector Road intersection at Fore Street. Table 4 below provides a summary of that effort:

Table 4
Vehicle Queuing Report
Proposed Connector Road Intersections

Proposed Intersection/Approach	Length of Storage	95th Percentile Queues 2019 Post-Development Conditions	
		AM Peak Hour	PM Peak Hour
Connector Road @ Level 1 Entrance			
- Garage Entrance Lane	55 to 60 feet	60 feet	48 feet
Connector Road @ Level 2 Entrance			
- Garage Entrance Lane	55 to 60 feet	73 feet	32 feet
Connector Road @ Fore Street			
- Connector Road Approach	n/a	39 feet	65 feet

The vehicle queue assessment completed for the entry lanes to both levels 1 and 2 of the parking garage and the proposed Connector Road approach at Fore Street clearly shows through vehicle travel both on Fore Street and directionally along the proposed Connector Road are not adversely impacted during either peak hour time period. The parking garage design provides approximately 60-feet of reservoir space within the garage in advance of the gate assembly, which effectively eliminates any vehicle back-up onto the proposed Connector Road during both peak hours. The analysis does show a 95th percentile vehicle queue of less than 3 or 4 vehicles will occur on the Connector Road approach in the evening peak hour, which is consistent with conditions found throughout the City during peak travel times.

TRAFFIC SAFETY CONDITIONS

The Maine Department of Transportation's (MDOT) Accident Records Section provided the latest three-year (2015 through 2017) crash data for the following street segments in the general vicinity of the proposed project site:

Franklin Arterial – Middle Street to Commercial Street
India Street – Congress Street to Commercial Street
Hancock Street/Middle Street to Commercial Street/Thames Street
Mountfort Street – Congress Street to India Street
Middle Street – Franklin Arterial to Hancock Street
Fore Street – Franklin Arterial to Mountfort Street
Commercial Street – Franklin Arterial to India Street
Thames Street – India Street to Hancock Street

MaineDOT's safety audit is summarized as follows and attached as an appendix to the report:

2015 -2017 Traffic Accident Summary

Location	Total Crashes	Critical Rate Factor
1. Franklin Arterial @ Commercial Street	10	0.53
2. Franklin Arterial @ Fore Street	7	0.37
3. Franklin Arterial @ Middle Street	20	1.00
4. Congress Street @ India Street	11	0.70
5. Federal Street @ India Street	3	0.96
6. India Street @ Newbury Street	2	0.65
7. India Street @ Middle Street	5	1.39
8. India Street @ Fore Street	1	0.20
9. Fore Street @ Mountfort Street	1	0.33
10. Mountfort Street @ Congress Street	10	0.63
11. Federal Street @ Mountfort Street	1	1.08
12. Mountfort Street @ Newbury Street	1	1.13
13. Fore Street @ Hancock Street	3	1.21
14. Hancock Street @ Thames Street	1	0.53
15. Middle Street @ Hampshire Street	1	0.62
16. India Street @ Newbury Street	2	0.65
17. Franklin Arterial btw. Commercial Street and Fore Street WB	1	0.48
18. Franklin Arterial btw. Fore Street and Middle Street WB	1	0.43
19. Franklin Arterial btw. Middle Street and Fore Street EB	1	0.43
20. Franklin Arterial btw. Fore Street and Commercial Street EB	2	0.86
21. India Street btw. Congress Street and Federal Street	1	0.31
22. India Street btw. Federal Street and Newbury Street	4	1.85
23. India Street btw. Newbury Street and Middle Street	1	0.43
24. Fore Street btw. India Street and Hancock Street	1	0.36
25. Fore Street btw. Franklin Arterial and India Street	5	1.43
26. Middle Street btw. Franklin Arterial and Hampshire Street	3	1.03
27. Middle Street btw. Hampshire Street and India Street	1	0.92
28. Commercial Street btw. Franklin Arterial and India Street/Thames Street	6	1.28
29. Fore Street btw. Mountfort Street and Hancock Street	4	1.31
30. Mountfort Street btw. Congress Street and Federal Street	3	1.09
31. Mountfort Street btw. Newbury Street and Fore Street	5	4.80
32. Hancock Street btw. Fore Street and Middle Street	1	1.07

The MDOT considers any roadway intersection or segment a high crash location if both of the following criteria are met:

- ***8 or more accidents and,***
- ***A Critical Rate Factor greater than 1.00***

As the data presented in the chart shows, there are no high crash locations within the expanded study area.

VEHCILE SIGHT DISTANCE

The Maine Department of Transportation's Highway Entrance and Driveway Rules require the following sight distances for a non-mobility roadway:

Sight Distance Standards

Speed Limit	Sight Distance
25 mph	200 feet
30	250
35	305
40	360
45	425
50	495
55	570

Fore Street is currently posted with a regulatory speed limit of 25mph, which requires an unobstructed sightline of 200 feet. It is assumed the proposed connector road will also be posted at 25mph upon completion of construction. Sight distance measurements were determined for each of the following locations:

Proposed driveway entrance to the ground level of the parking garage at Fore Street
Proposed Connector Road approach at Fore Street
Proposed driveway entrance to level 1 of the parking garage at the Proposed Connector Road
Proposed driveway entrance to level 2 of the parking garage at the Proposed Connector Road

Table 5, which follows, provides the measured sight distances at each location:

Table 5
Vehicle Sight Distance Measurements
Proposed "100 Fore Street" Project

Intersection/Approach	Measured Distance Left	Measured Distance Right
Fore Street @ Ground Level Ent.		
- Ground Level Ent. Approach	Unobstructed Sightline to Hancock Street Intersection	260-feet
Fore Street @ Connector Rd.	230-feet	300-feet plus
- Connector Road	230-feet	300-feet plus
Connector Road at Level 2 Ent.		
- Level 2 entrance	55-feet	Unobstructed Sightline to Thames Street Ext.
Connector Road at Level 1 Ent.		
- Level 1 entrance	210-feet	Unobstructed Sightline to Thames Street Ext.

SUMMARY & RECOMMENDATIONS

1. The proposed 100 Fore Street development proposes construction of an approximate 86,500 square foot building with nearly 82,900 square feet of office space, 3,600 square feet of retail space and a three-level parking garage with a total of 539 spaces. The proposed office and retail building are expected to generate a peak parking demand of 218 spaces leaving a balance of 321 spaces within the garage for other parking tenants and/or transient parkers within the immediate geographic area of the proposed site. The proposed site office and retail space is expected to generate a total of 152 vehicle trips in the "*morning*" peak hour and 159 trips in the "*evening*" peak hour. The proposed surplus parking spaces within the parking structure are also expected to generate a lesser volume of vehicle trips during both peak hours. A total of 106 trips are generated by the surplus parking spaces in the AM peak hour and 87 trips in the PM peak hour. This

report has assumed that all trips generated by the surplus parking spaces are "*new*" trips to the roadway network, although, it is highly reasonable to expect that a number of these trips are, in fact, completed by existing motorists presently parking elsewhere in the general area of the proposed site.

2. A detailed operational assessment was conducted for each study intersection based upon projected 2019 Post-Development travel conditions. The results of the analysis conclusively show that each of the study intersections which include Fore @ Hancock Streets, Fore @ Mountfort Street, Fore Street @ Proposed Connector Road and each of the three proposed garage entrance intersections will operate at the highest or "*best*" level of service "A" during both peak hour time periods.

3. The vehicle queue assessment completed for the entry lanes to both levels 1 and 2 of the parking garage and the proposed Connector Road approach at Fore Street clearly shows through vehicle travel both on Fore Street and directionally along the proposed Connector Road are not adversely impacted during either peak hour time period. The parking garage design provides approximately 60-feet of reservoir space within the garage in advance of the gate assembly, which effectively eliminates any vehicle back-up onto the proposed Connector Road during both peak hours. The analysis does show a 95th percentile vehicle queue of less than 3 or 4 vehicles will occur on the Connector Road approach in the evening peak hour, which is consistent with conditions found throughout the City during peak travel times.

4. The Maine Department of Transportation provided the most current three-year roadway (2015 through 2017) safety conditions for a very large geographic area centered around the proposed development site. MaineDOT's safety audit included portions of Franklin Arterial, Middle Street, Commercial Street, Fore Street, Hancock Street and the full lengths of India, Thames and Mountfort Streets. Their report shows the number of vehicle crashes and the corresponding critical rate ratios for each are below MaineDOT's criteria for identification of a high crash location.

5. Vehicle sight distance measurements were determined for each proposed garage approach (ground level, Level 1 and Level 2) as well as the proposed Connector Road intersection at Fore Street. Acceptable sight distance is attainable at each location; except the sightline (left) from the exit approach of the Level 2 entrance is limited to approximately 55-feet, compared to the standard of 200-feet.

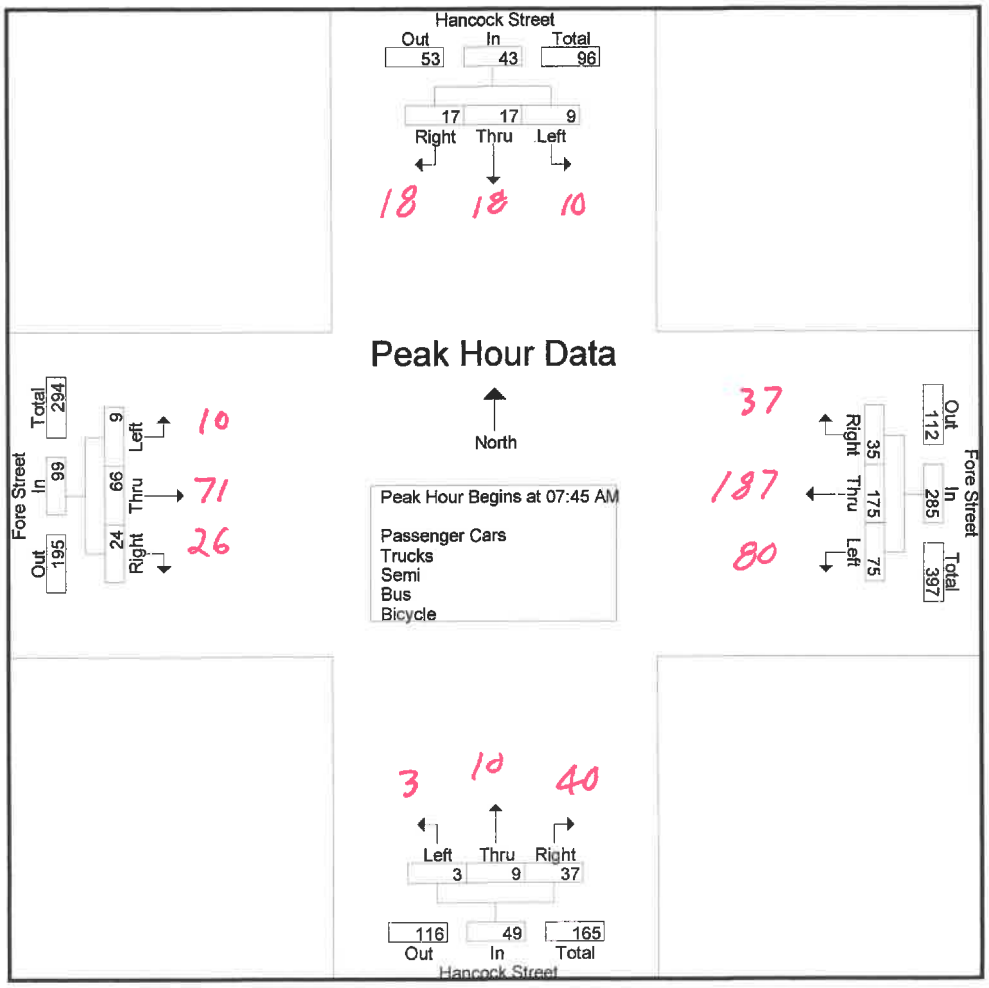
6. The proposed 100 Fore Street office/retail building is expected to generate a peak parking demand of 218 spaces. Traffic Solutions recommends that the building tenants be assigned reserved parking spaces on Level 2 of the proposed parking garage with the residual balance assigned to Level 1. Further, it is suggested that Level 2 of the parking garage be operated using an automated recorder system, whereby building tenants upon entering the garage are not required to stop, effectively eliminating any vehicle queuing problem within the driveway entrance apron to Level 2 of the garage.

7. Appropriate traffic warning signs should be placed on the Fore Street (NB) approach at the proposed Connector Road entrance alerting motorists turning onto the Connector Road of the driveway entrance to Level 2 of the parking garage. Additionally, a second warning sign should be placed on the exit lane of Level 2 warning motorists of vehicles approaching from Fore Street.

Traffic Solutions
17 Mountview Drive
Gorham, ME 04038

Portland Fore Street & Hancock Street AM
October 2, 2018
Rain
Count by Jen Gilbert

File Name : portland fore & hancock october 2, 2018 am
Site Code : 01002181
Start Date : 10/2/2018
Page No : 6



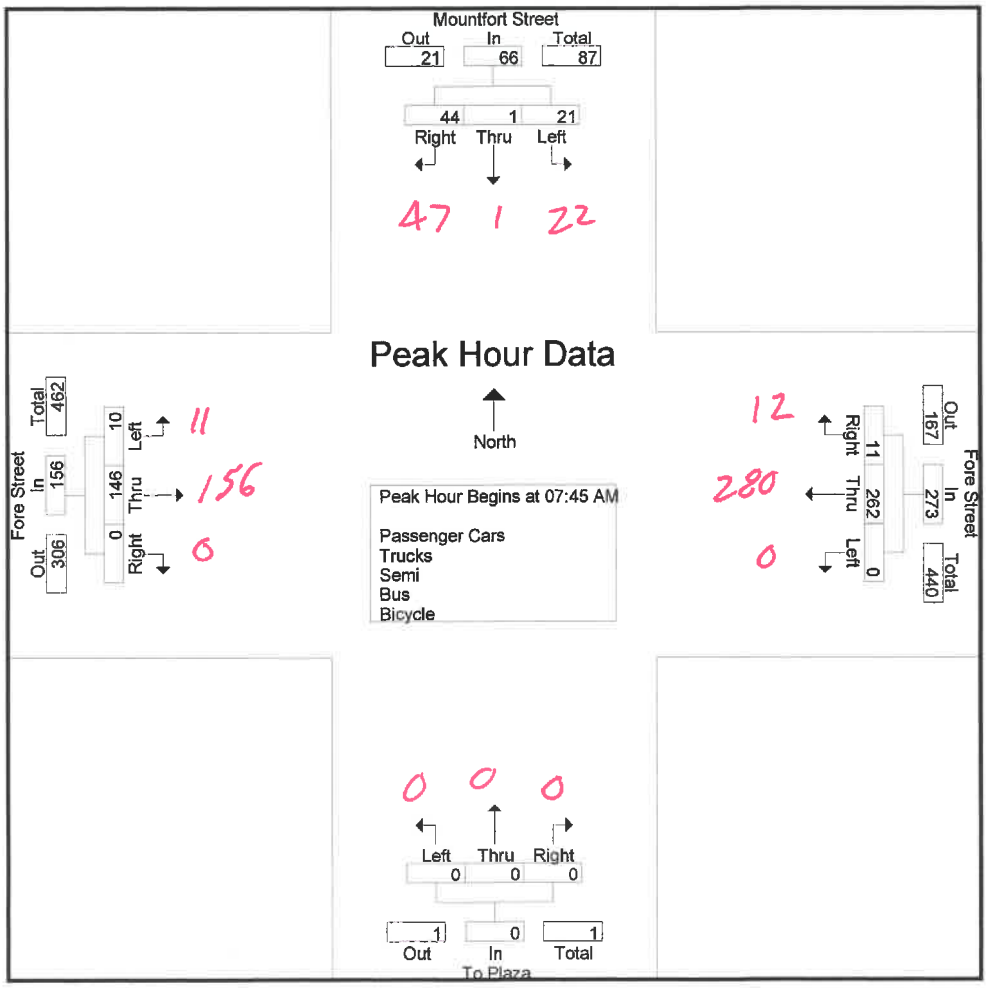
XX = 2018 DHV

Traffic Solutions

17 Mountview Drive
Gorham, ME 04038

Fore Street & Mountfort Street AM
September 25, 2018
Sunny
Count by Jen Gilbert

File Name : Portland Fore St Mountfort Street 092518 AM
Site Code : 00925181
Start Date : 9/25/2018
Page No : 6

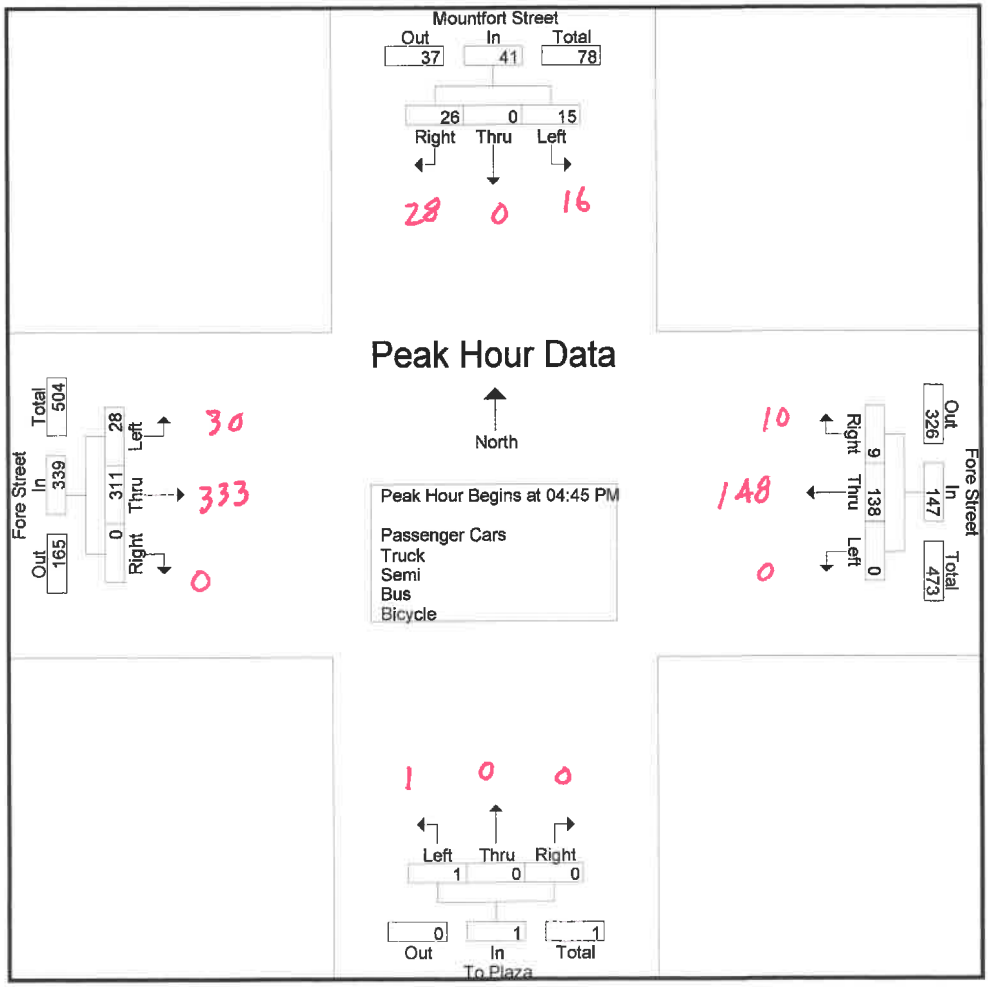


xx = 2018 DHV

Traffic Solutions
17 Mountview Drive
Gorham, ME 04038

Fore Street & Mountfort Street PM
September 24, 2018
Sunny
Count by Jen Gilbert

File Name : Portland Fore St Mountfort Street 092418 PM
Site Code : 00924182
Start Date : 9/24/2018
Page No : 6

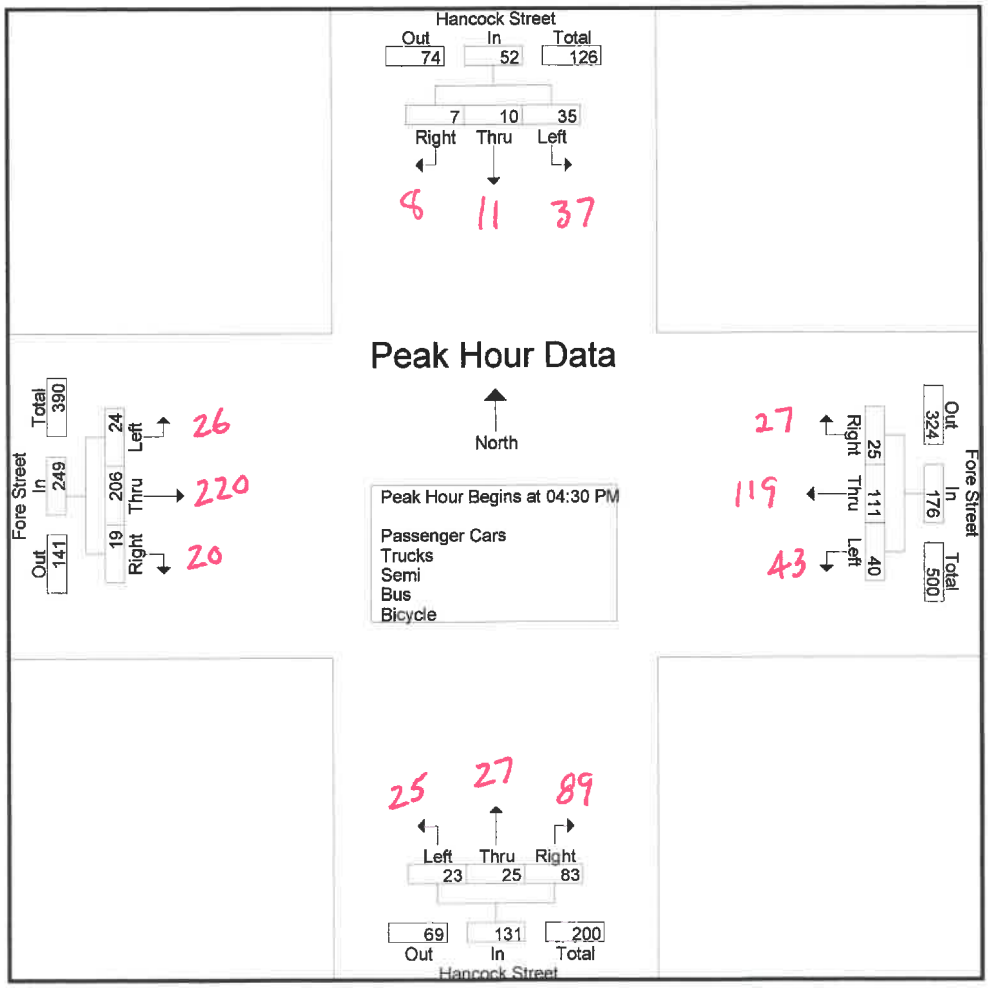


xx = 2018 DHV

Traffic Solutions
17 Mountview Drive
Gorham, ME 04038

Fore Street & Hancock Street PM
October 1, 2018
Rain
Count by Jen Gilbert

File Name : Portland Fore & Hancock October 1, 2018 PM
Site Code : 01001182
Start Date : 10/1/2018
Page No : 6



XX = 2018 DHV

WEX Alternate Mode Use Analysis Under Current Conditions

September 2017

Cushman Transportation Consulting, LLC (CTC) analyzed commute data from the U.S. Census Bureau's American Community Survey (ACS) and OnTheMap Application to formulate an estimate of multi-modal WEX employee trips to the 0 Hancock Street site. This is given current commuting patterns, without influence of proposed Transportation Demand Management planning or program implementation. Under these conditions, it is estimated that 12.8% of WEX staff will reach work using alternate modes of travel than the single-occupancy automobile.

According to OnTheMap, 25% of people working in Portland originate from the city of Portland itself. Another 53% of workers come from an area within a 24 mile radius of the city, 12.5% come from within 25-50 miles and 9% travel further than 50 miles. Portland workers' use of alternate modes to get to work is higher than nearby communities – for example, 12% of Portland workers walk to reach their jobs. This greater multi-modal rate is most likely due to the city's higher land use density, large number of employers and extensive public transit coverage. Therefore, CTC separated the Portland commute data from that of other municipalities. In addition, CTC focused its data analysis on the Greater Portland region, given that most current WEX employees come from within the 24 mile range of Portland and new hires at the O Hancock Street site are likely to be Millenials (who are expected, and will be financially able to, live within this area).

Using 2015 ACS Journey to Work data, CTC created a regional average of drive alone, rideshare and public transit use for workers in the 20 nearby municipalities with the highest rates of workers coming to Portland. These are South Portland, Westbrook, Scarborough, Windham, Gorham, Saco, Falmouth, Cape Elizabeth, Biddeford, Cumberland, Standish, Yarmouth, Gray, Buxton, Old Orchard Beach, Brunswick, Lewiston, Freeport, Sanford, and Kennebunk. The results were an 8.5% carpooling rate and a 1% transit use rate. (Understanding that a reasonable distance for a regular bicycle commute is about 5 miles one way and a reasonable walking commute is 1.5 miles one way, CTC chose to make a conservative estimate of bicycle and pedestrian commuting and only use Portland data for these modes.)

Initial observations were that carpool rates ranged from 4.2-12.7% from surrounding municipalities. They were often lower the closer travelers were to Portland and/or the wealthier the community, with higher car ownership rates. Conversely, in general carpool

Cushman Transportation Consulting, LLC, 94 Beckett Street, 2nd Floor, Portland, ME 04101
Tel: (207) 200-1910 E-mail: sarah@sarahcushman.com www.sarahcushman.com

rates were higher the further away and/or for communities of more median income. In addition – and not surprisingly - location and distance seemed to be a factor for utilizing public transit to reach Portland; the range of use was 0-3.3%. Moreover, ACS transit use data has not yet caught up with communities that now have Lakes Region Explorer and METRO Breez service, so the transit use percentage may rise.

The Portland and surrounding communities alternate commute data was then applied to the 450 employees WEX will bring to the new headquarters at O Hancock Street. With the approximation of 25% of workers coming from Portland (133 people) and the remaining 75% from surrounding communities (337 people), CTC estimated the number of individual workers who will carpool, use transit, bicycle and walk to reach the site. The total number of employees estimated to use multi-modal methods versus driving alone to get to the site is 58 – or 12.8% - under current conditions and without implementation of Transportation Demand Management strategies. This analysis is shown in the following figure:

450	**total WEX employees at new Portland site**	
	113 workers estimated to come from within Portland (25%)	**Portland Commute Data**
9	people carpool	8%
3	people use transit	3%
2	people bike	2%
14	people walk	12%
	337 workers estimated to come from surrounding municipalities (75%)	**Average of Commute Data from Surrounding Communities**
27	people carpool	8.50%
3	people use transit	1%
58	**total WEX employees who would use multi-modal alternatives under current conditions/census data - 12.8%**	

Sources: The ACS data included Five-Year Estimate Data from 2010-2014 for Portland workers and 2015 Journey to Work data. OnTheMap includes 2014 American Community Survey data and LEHD Origin-Destination Employment Statistics from Beginning of Quarter Employment, 2nd Quarter of 2002-2014.

11-12 11-13 11-14 11-15

Time/ Date	Monday	Tuesday	Wednesday	Thursday
	Monday	Tuesday	Wednesday	Thursday
7am	7am 309 (15 constr.)	7am 320 (15 const.)	7am 327 (15 const.)	7am 316 (15 const.)
8am	8am 351 (304 open)	8am 364 (290 open)	8am 370 (285 open)	8am 368 (287 open)
9am	9am 401 (254 open)	9am 467 (188 open)	9am 474 (181 open)	
10am	10am 427 (228 open)	10am 484 (171 open)	10am 492 (163 open)	
11am	11am 429 (226 open)	11am 486 (169 open)	11am 481 (174 open)	
12pm	12pm 424 (231 open)	12pm 490 (165 open)	12pm 469 (186 open)	
1pm	1pm 431 (224 open)	1pm 493 (162 open)	1pm 480 (175 open)	
2pm	2pm 433 (222 open)	2pm 489 (166 open)	2pm 485 (170 open)	
3pm	3pm 419 (236 open)	3pm 467 (188 open)	3pm 472 (183 open)	
4pm	4pm 414 (241 open)	4pm 454 (201 open)	4pm 448 (207 open)	
5pm	5pm 371 (384 open)	5pm 412 (243 open)	5pm 417 (238 open)	
6pm	6pm 333 (322 open)	6pm 341 (314 open)	6pm 329 (326 open)	

Ocean Gateway

Movement By Day

Version 2.6

Report Lane(s): 0..9, 63.
From: 11/14/2018 00:00:00
To: 11/14/2018 23:59:59

Report generated on *11/15/2018* **at** *09:53:56*

Date	Lane #	Lane Name	Tickets	Credit	Monthly	Bar Codes	Hotel Cards	Arming Loop	Closing Loop	Manual Gate
11/14/2018	1	Entry 1	0	0	342	41	23	415	406	0
11/14/2018	3	Entry 3	0	0	18	2	0	369	369	1
11/14/2018	5	Entry 5	0	0	195	57	36	288	504	0
11/14/2018		Entry Total	0	0	555	100	59	1072	1279	1
11/14/2018	2	Exit 2	0	0	310	22	15	369	369	1
11/14/2018	4	Exit 4	0	0	158	8	34	215	210	0
11/14/2018	6	Exit 6	0	0	82	11	16	253	110	0
11/14/2018		Exit Total	0	0	550	41	65	837	689	1
Total	1	Entry 1	0	0	342	41	23	415	406	0
Total	3	Entry 3	0	0	18	2	0	369	369	1
Total	5	Entry 5	0	0	195	57	36	288	504	0
		Entry Total	0	0	555	100	59	1072	1279	1
Total	2	Exit 2	0	0	310	22	15	369	369	1
Total	4	Exit 4	0	0	158	8	34	215	210	0
Total	6	Exit 6	0	0	82	11	16	253	110	0
		Exit Total	0	0	550	41	65	837	689	1

Ocean Gateway

Movement By Day

Version 2.6

Report Lane(s): 0..9, 63.
From: 11/14/2018 17:00:00
To: 11/14/2018 18:00:59

Report generated on *11/15/2018* **at** *09:53:23*

Date	Lane #	Lane Name	Tickets	Credit	Monthly	Bar Codes	Hotel Cards	Arming Loop	Closing Loop	Manual Gate
11/14/2018	1	Entry 1	0	0	13	4	5	22	22	0
11/14/2018	3	Entry 3	0	0	0	0	0	108	108	0
11/14/2018	5	Entry 5	0	0	5	5	4	14	14	0
11/14/2018		Entry Total	0	0	18	9	9	144	144	0
11/14/2018	2	Exit 2	0	0	105	2	1	108	108	0
11/14/2018	4	Exit 4	0	0	38	0	0	39	38	0
11/14/2018	6	Exit 6	0	0	17	1	0	19	19	0
11/14/2018		Exit Total	0	0	160	3	1	166	165	0
Total	1	Entry 1	0	0	13	4	5	22	22	0
Total	3	Entry 3	0	0	0	0	0	108	108	0
Total	5	Entry 5	0	0	5	5	4	14	14	0
		Entry Total	0	0	18	9	9	144	144	0
Total	2	Exit 2	0	0	105	2	1	108	108	0
Total	4	Exit 4	0	0	38	0	0	39	38	0
Total	6	Exit 6	0	0	17	1	0	19	19	0
		Exit Total	0	0	160	3	1	166	165	0

5 to 6 PM

27 enter

163 exit

190 vehicles

190 ÷ 715 = 27%

Ocean Gateway

Movement By Day

Report Lane(s): 0..9, 63.
From: 11/14/2018 16:00:00
To: 11/14/2018 17:00:59

Version 2.6

Report generated on *11/15/2018* **at** *09:53:11*

Date	Lane #	Lane Name	Tickets	Credit	Monthly	Bar Codes	Hotel Cards	Arming Loop	Closing Loop	Manual Gate
11/14/2018	1	Entry 1	0	0	16	5	1	22	22	0
11/14/2018	3	Entry 3	0	0	0	0	0	55	56	0
11/14/2018	5	Entry 5	0	0	3	4	9	16	16	0
11/14/2018		Entry Total	0	0	19	9	10	93	94	0
11/14/2018	2	Exit 2	0	0	51	2	1	55	55	0
11/14/2018	4	Exit 4	0	0	26	2	3	32	33	0
11/14/2018	6	Exit 6	0	0	13	1	1	15	15	0
11/14/2018		Exit Total	0	0	90	5	5	102	103	0
Total	1	Entry 1	0	0	16	5	1	22	22	0
Total	3	Entry 3	0	0	0	0	0	55	56	0
Total	5	Entry 5	0	0	3	4	9	16	16	0
		Entry Total	0	0	19	9	10	93	94	0
Total	2	Exit 2	0	0	51	2	1	55	55	0
Total	4	Exit 4	0	0	26	2	3	32	33	0
Total	6	Exit 6	0	0	13	1	1	15	15	0
		Exit Total	0	0	90	5	5	102	103	0

Ocean Gateway

Movement By Day

Report Lane(s): 0..9, 63.
From: 11/15/2018 08:00:00
To: 11/15/2018 09:00:59

Version 2.6

Report generated on *11/15/2018* **at** *09:50:23*

Date	Lane #	Lane Name	Tickets	Credit	Monthly	Bar Codes	Hotel Cards	Arming Loop	Closing Loop	Manual Gate
11/15/2018	1	Entry 1	0	0	104	5	1	110	110	0
11/15/2018	3	Entry 3	0	0	13	0	0	13	13	0
11/15/2018	5	Entry 5	0	0	86	1	1	87	88	0
11/15/2018		Entry Total	0	0	203	6	2	210	211	0
11/15/2018	2	Exit 2	0	0	0	0	0	13	13	0
11/15/2018	4	Exit 4	0	0	18	0	13	33	32	0
11/15/2018	6	Exit 6	0	0	7	0	2	9	9	0
11/15/2018		Exit Total	0	0	25	0	15	55	54	0
Total	1	Entry 1	0	0	104	5	1	110	110	0
Total	3	Entry 3	0	0	13	0	0	13	13	0
Total	5	Entry 5	0	0	86	1	1	87	88	0
		Entry Total	0	0	203	6	2	210	211	0
Total	2	Exit 2	0	0	0	0	0	13	13	0
Total	4	Exit 4	0	0	18	0	13	33	32	0
Total	6	Exit 6	0	0	7	0	2	9	9	0
		Exit Total	0	0	25	0	15	55	54	0

8 to 9 AM

209 enter garage

25 exit garage

TOTAL 234 vehicles

715 spaces in garage

234 ÷ 715 = 33% of capacity

Ocean Gateway

Movement By Day

Report Lane(s): 0..9, 63.

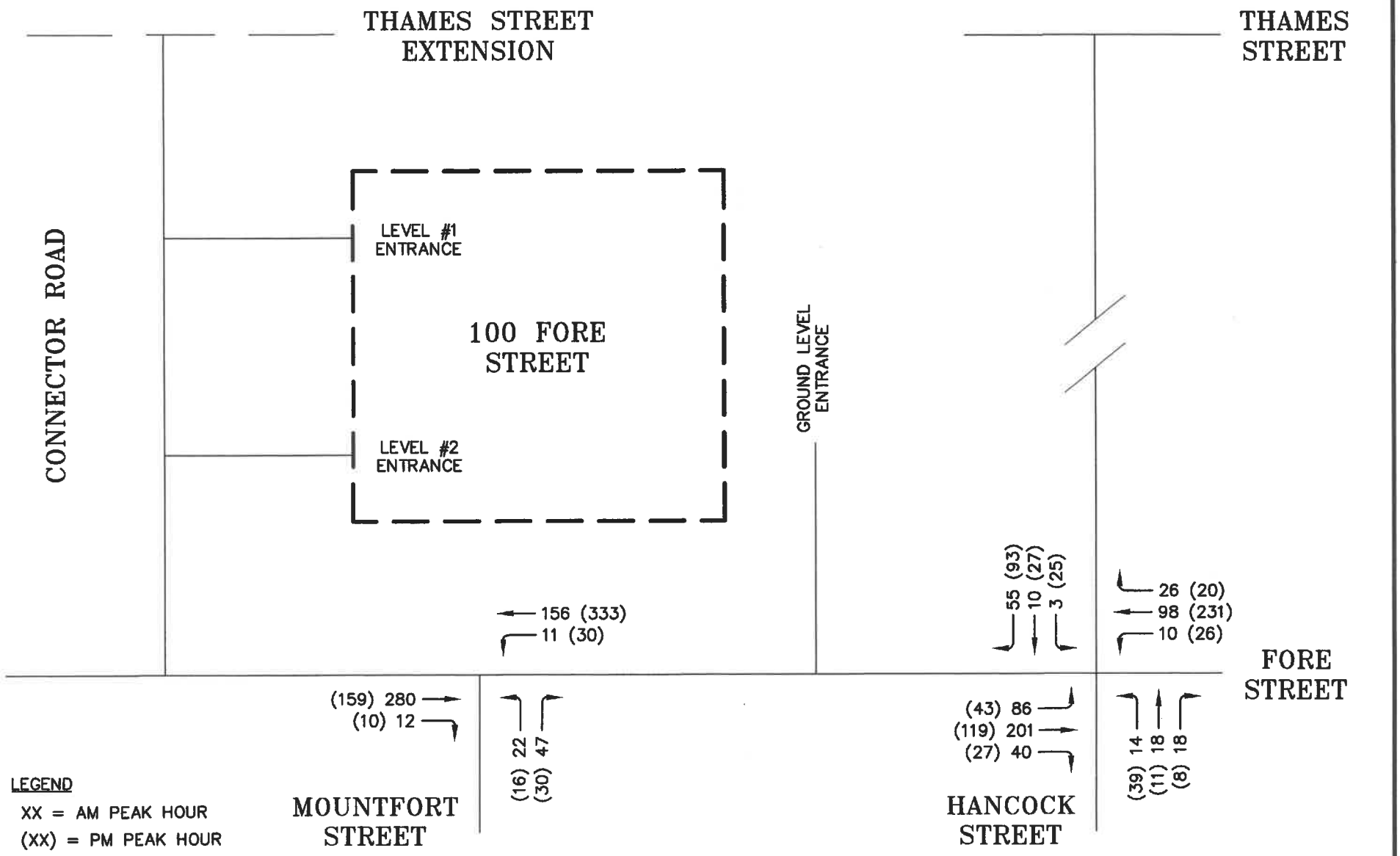
From: 11/15/2018 07:00:00

To: 11/15/2018 08:00:59

Version 2.6

Report generated on *11/15/2018* **at** *09:49:56*

Date	Lane #	Lane Name	Tickets	Credit	Monthly	Bar Codes	Hotel Cards	Arming Loop	Closing Loop	Manual Gate
11/15/2018	1	Entry 1	0	0	53	1	1	56	56	0
11/15/2018	3	Entry 3	0	0	6	2	0	15	16	1
11/15/2018	5	Entry 5	0	0	40	4	0	44	44	0
11/15/2018		Entry Total	0	0	99	7	1	115	116	1
11/15/2018	2	Exit 2	0	0	0	2	5	16	15	2
11/15/2018	4	Exit 4	0	0	21	1	10	33	31	0
11/15/2018	6	Exit 6	0	0	5	0	3	8	8	0
11/15/2018		Exit Total	0	0	26	3	18	57	54	2
Total	1	Entry 1	0	0	53	1	1	56	56	0
Total	3	Entry 3	0	0	6	2	0	15	16	1
Total	5	Entry 5	0	0	40	4	0	44	44	0
		Entry Total	0	0	99	7	1	115	116	1
Total	2	Exit 2	0	0	0	2	5	16	15	2
Total	4	Exit 4	0	0	21	1	10	33	31	0
Total	6	Exit 6	0	0	5	0	3	8	8	0
		Exit Total	0	0	26	3	18	57	54	2

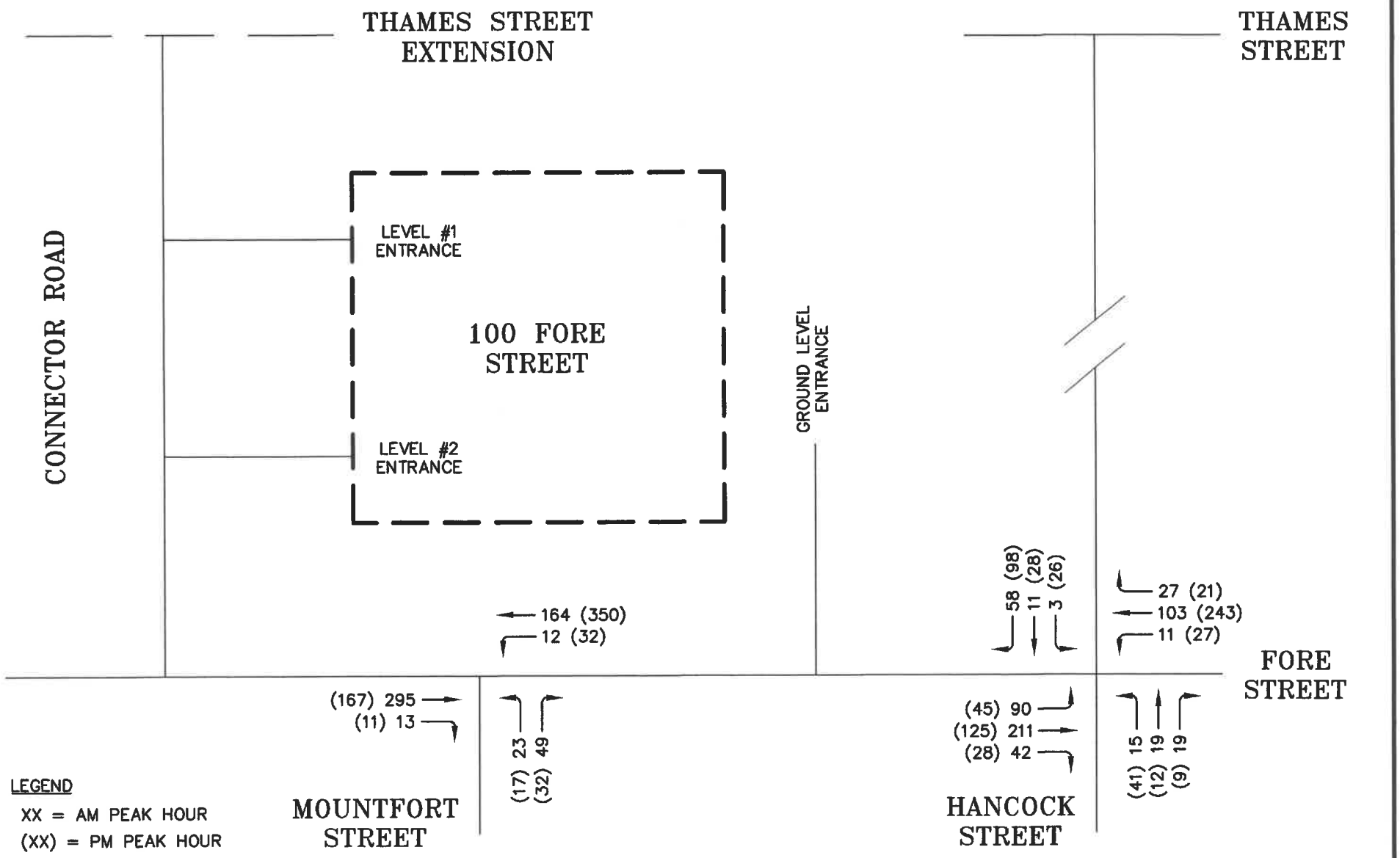


2012 DESIGN HOUR TRAFFIC

FIGURE 1

E:\LAND PROJECTS\34000\34398 TRAFFIC SOLUTIONS\100 FORE STREET\PLANSET\100 FORE STREET.DWG

100 FORE STREET PORTLAND, ME	TRAFFIC SOLUTIONS 17 MOUNTVIEW DRIVE, GORHAM, MAINE 04038
DATE: DECEMBER, 2018	FIGURE: 1

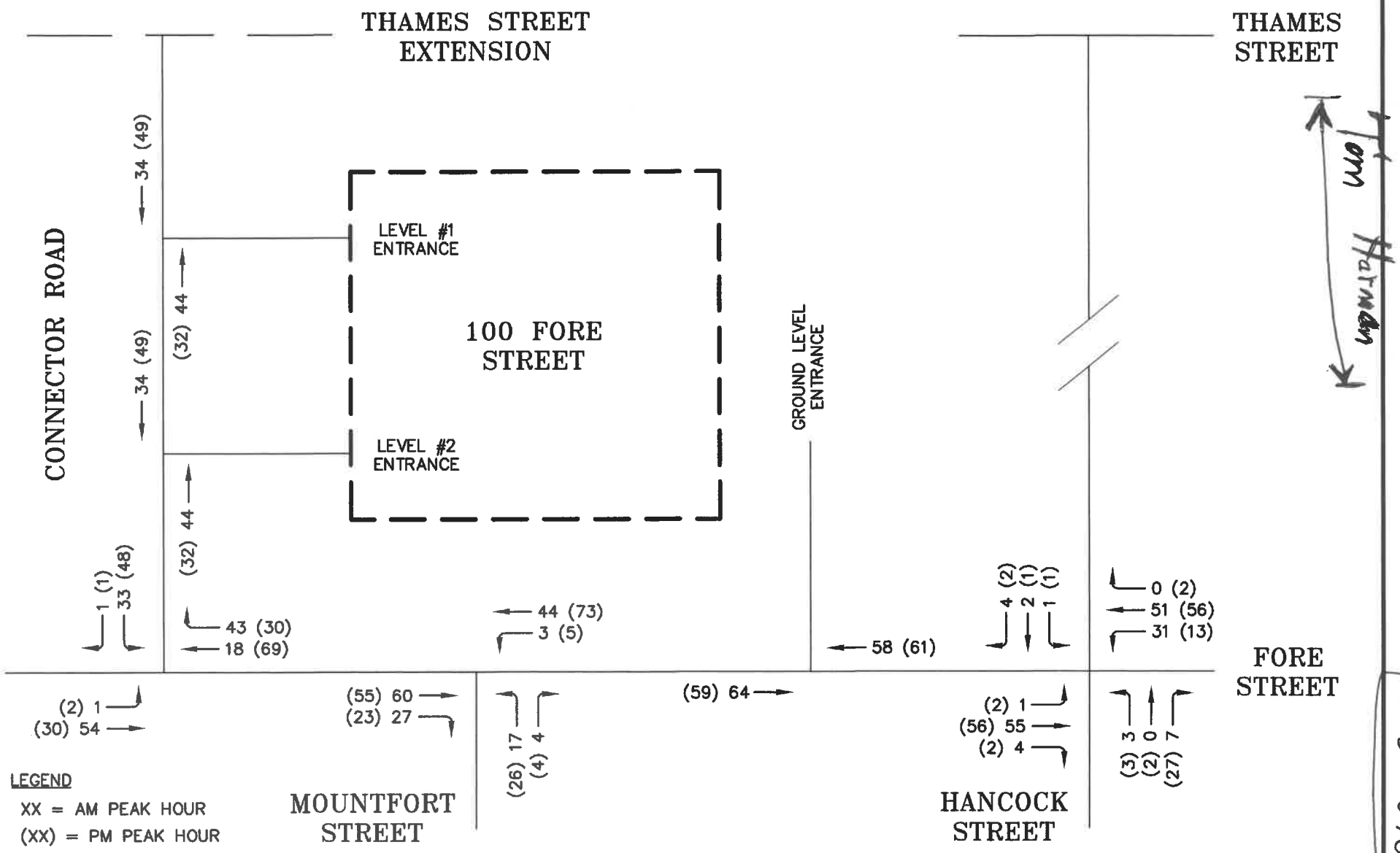


2019 DESIGN HOUR TRAFFIC

FIGURE 2

E:\LAND PROJECTS\34000\34399 TRAFFIC SOLUTIONS\100 FORE STREET\PLANSET\100 FORE STREET.DWG

100 FORE STREET PORTLAND, ME	TRAFFIC SOLUTIONS 17 MOUNTVIEW DRIVE, GORHAM, MAINE 04038
DATE: DECEMBER, 2018	FIGURE: 2

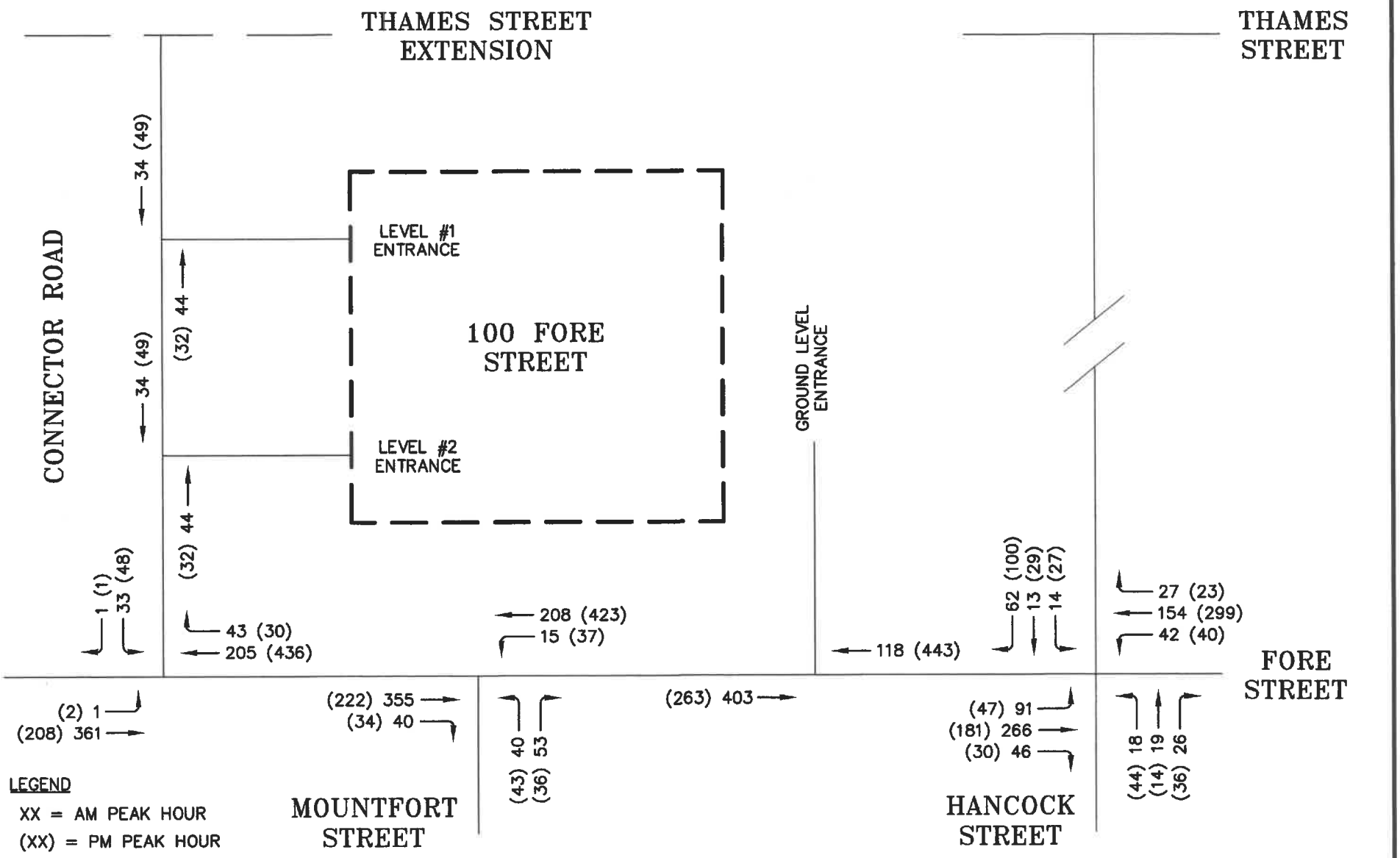


OTHER DEVELOPMENT TRAFFIC

FIGURE 3

E:\LAND PROJECTS\34000\34399 TRAFFIC SOLUTIONS\100 FORE STREET\PLANSET\100 FORE STREET.DWG

100 FORE STREET PORTLAND, ME	TRAFFIC SOLUTIONS 17 MOUNTVIEW DRIVE, GORHAM, MAINE 04038
DATE: DECEMBER, 2018	FIGURE: 3

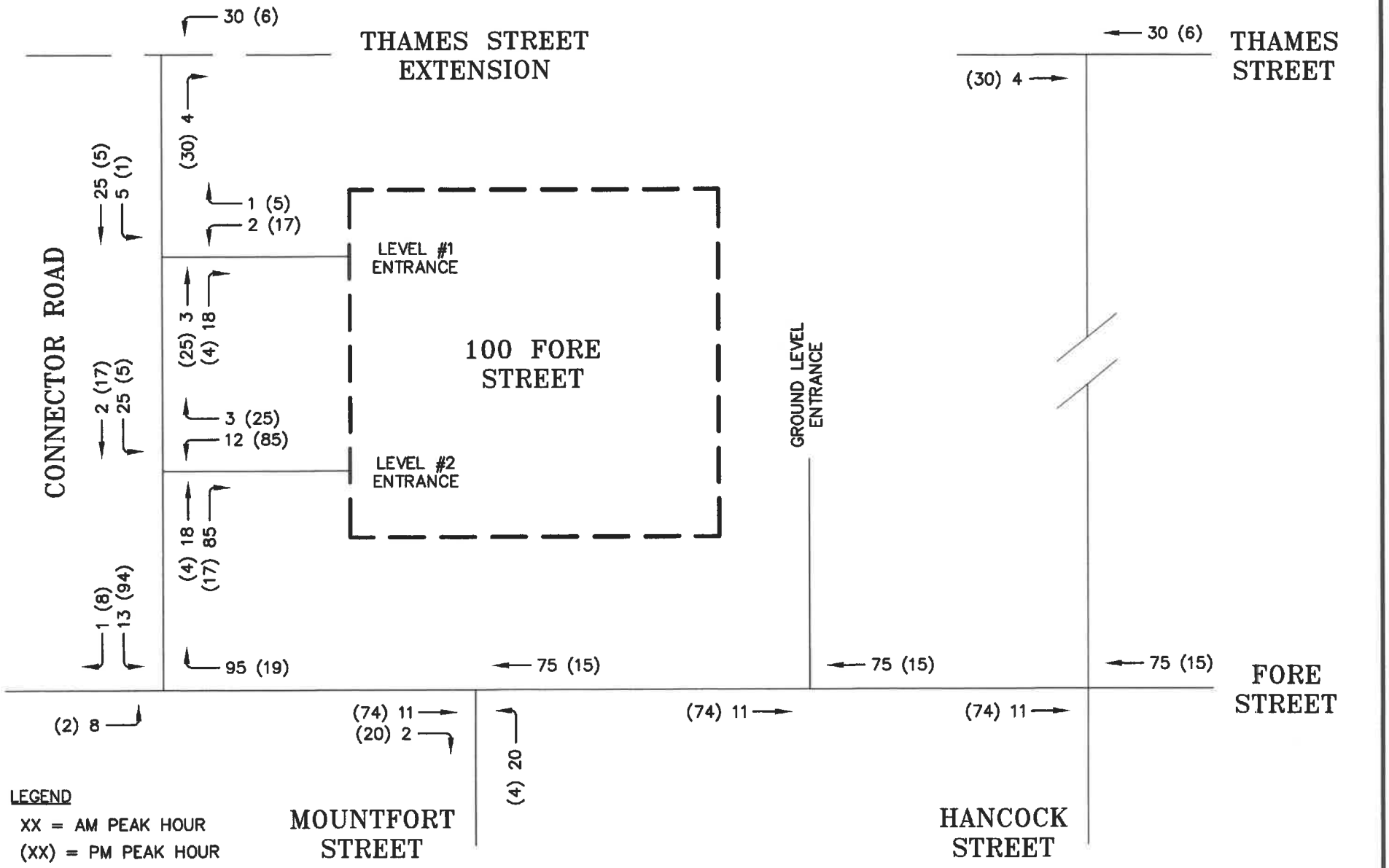


2019 PRE-DEVELOPMENT TRAFFIC

FIGURE 4

F:\LAND PROJECTS\34000\34399 TRAFFIC SOLUTIONS\100 FORE STREET\PLANSET\100 FORE STREET.DWG

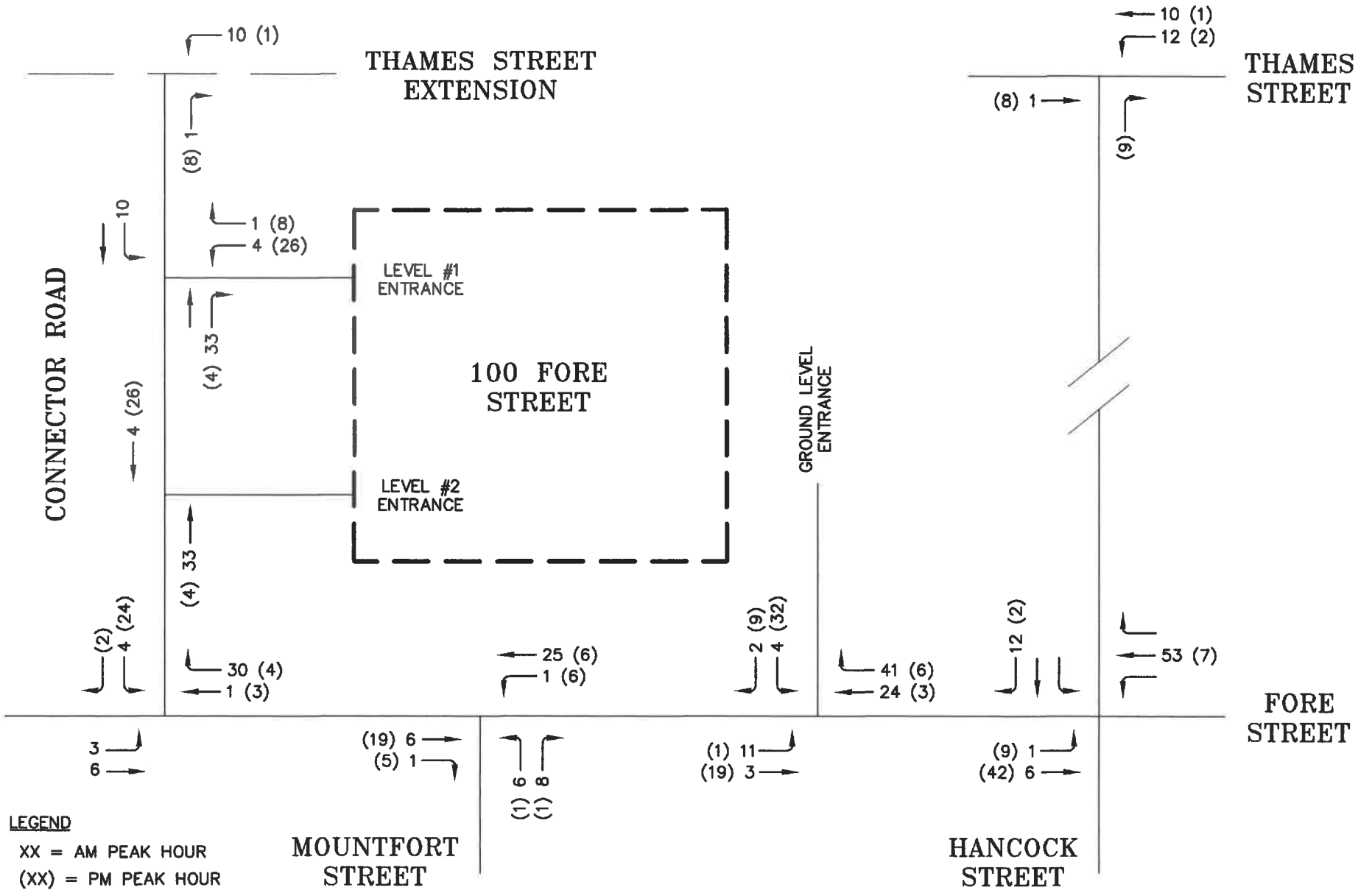
100 FORE STREET PORTLAND, ME	TRAFFIC SOLUTIONS 17 MOUNTVIEW DRIVE, GORHAM, MAINE 04038
DATE: DECEMBER, 2018	FIGURE: 4



SITE TRIP ASSIGNMENT
(PROPOSED OFFICE/RETAIL BUILDING)
FIGURE 5

E:\JAND PROJECTS\34000\34389 TRAFFIC SOLUTIONS\100 FORE STREET\PLANSET\100 FORE STREET.DWG

100 FORE STREET PORTLAND, ME	TRAFFIC SOLUTIONS 17 MOUNTVIEW DRIVE, GORHAM, MAINE 04038
DATE: DECEMBER, 2018	FIGURE: 5

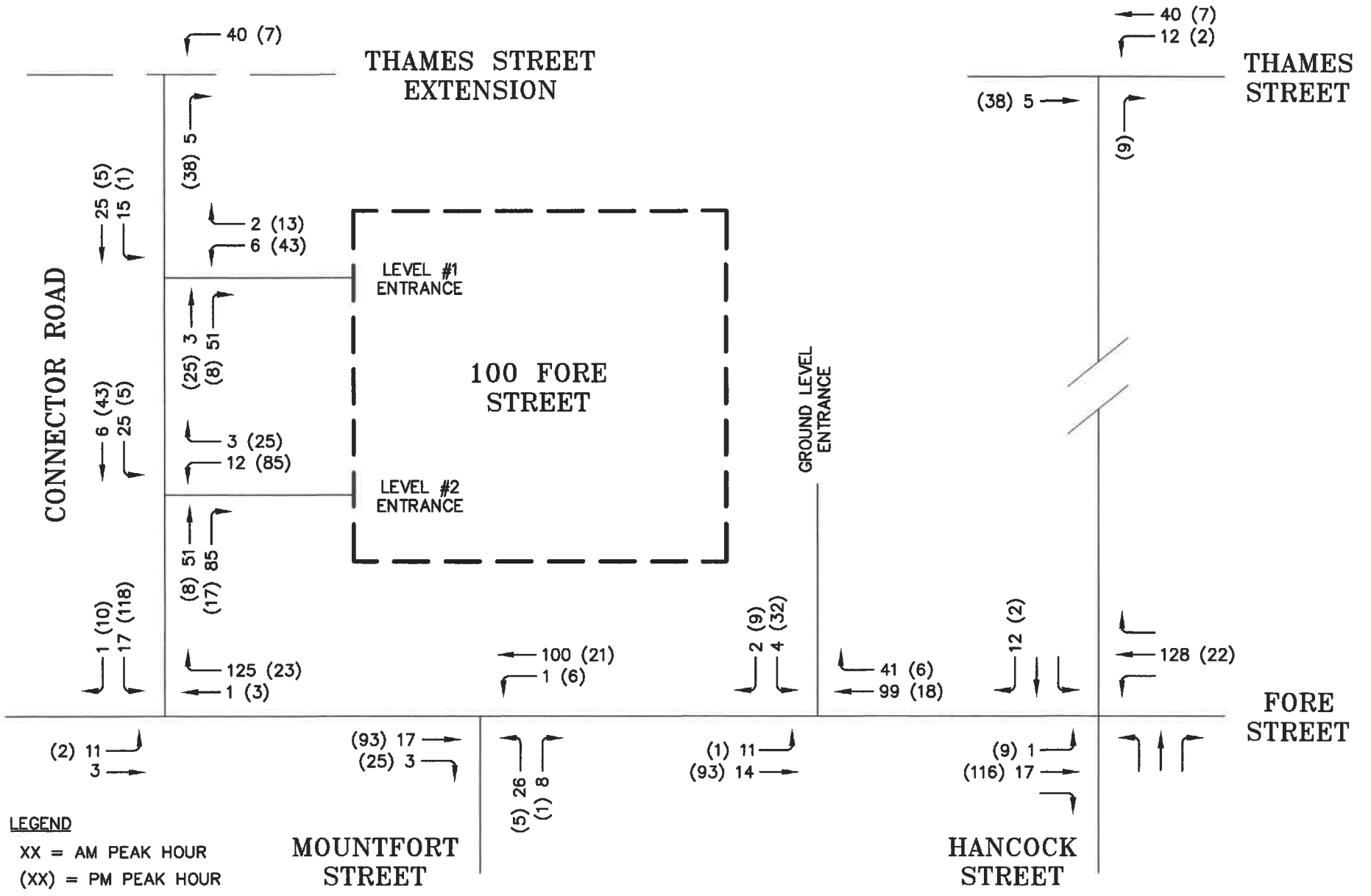


PARKING GARAGE – TRIP ASSIGNMENT (SURPLUS PARKING SPACES)

FIGURE 6

E:\LAND PROJECTS\34000\34368 TRAFFIC SOLUTIONS\100 FORE STREET\PLANSET\100 FORE STREET.DWG

100 FORE STREET PORTLAND, ME	TRAFFIC SOLUTIONS 17 MOUNTVIEW DRIVE, GORHAM, MAINE 04038
DATE: DECEMBER, 2018	FIGURE: 6

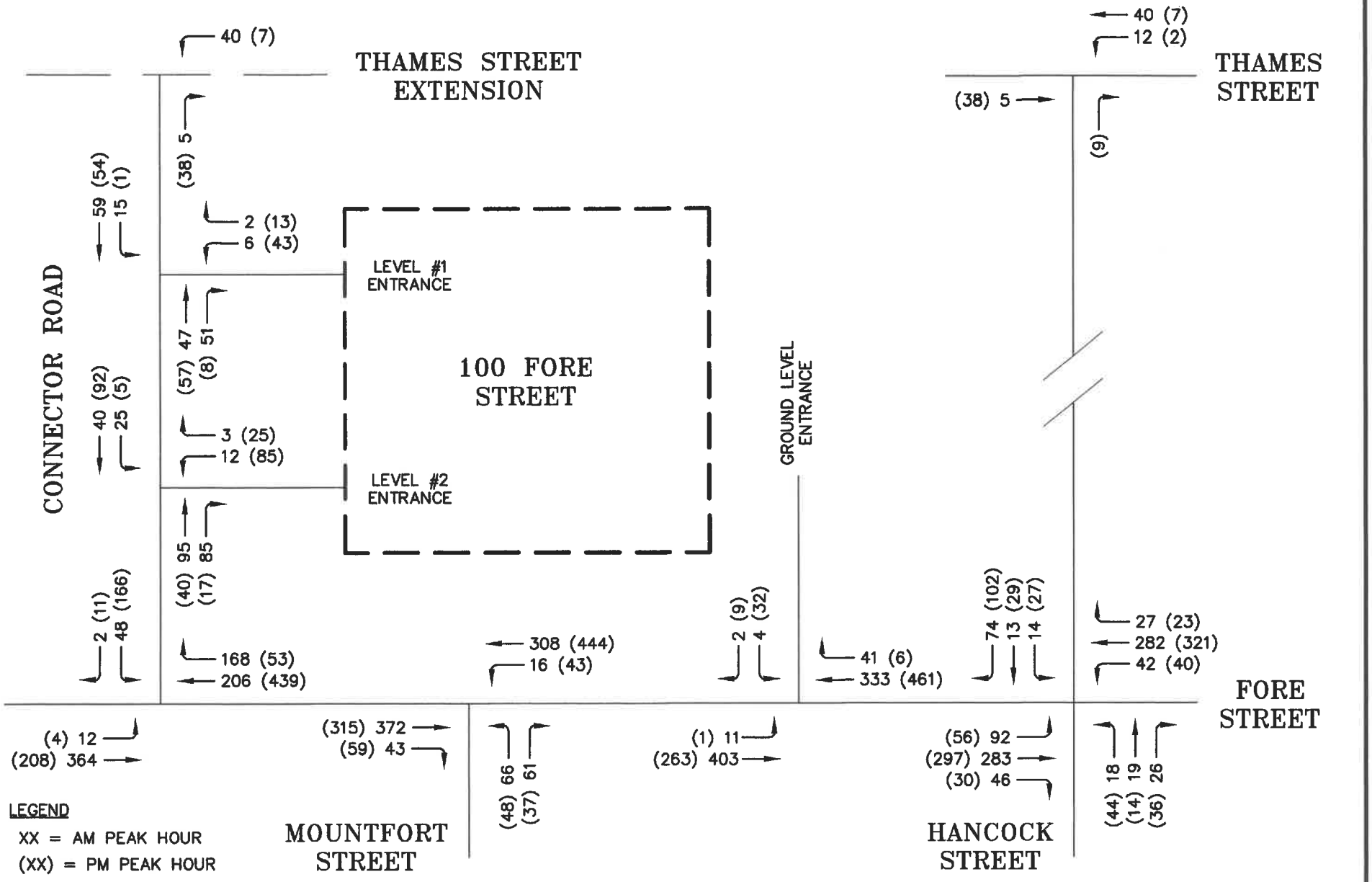


TOTAL SITE – TRAFFIC ASSIGNMENT (SITE BUILDING & SURPLUS PARKING SPACES)

FIGURE 7

E:\LAND PROJECTS\34000\34399 TRAFFIC SOLUTIONS\100 FORE STREET\PLANSET\100 FORE STREET.DWG

Project Name and Location: 100 FORE STREET, PORTLAND, ME	TRAFFIC SOLUTIONS, 17 MOUNTVIEW DRIVE, GORHAM, MAINE 04038
DATE: DECEMBER, 2018	FIGURE: 7



2019 POST-DEVELOPMENT TRAFFIC

FIGURE 8

E:\LAND PROJECTS\34000\34399 TRAFFIC SOLUTIONS\100 FORE STREET\PLANSET\100 FORE STREET.DWG

Project Name and Location: 100 FORE STREET, PORTLAND, ME	TRAFFIC SOLUTIONS, 17 MOUNTVIEW DRIVE, GORHAM, MAINE 04038
DATE: DECEMBER, 2018	FIGURE: 8

Summary of All Intervals

Run Number	1	3	5	6	7	Avg
Start Time	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1138	1141	1181	1156	1132	1151
Vehs Exited	1129	1136	1175	1160	1128	1146
Starting Vehs	14	16	17	16	20	15
Ending Vehs	23	21	23	12	24	19
Travel Distance (mi)	336	334	352	340	337	340
Travel Time (hr)	18.0	18.1	19.0	18.3	18.3	18.4
Total Delay (hr)	3.6	3.7	3.8	3.6	3.7	3.6
Total Stops	1292	1329	1346	1306	1282	1312
Fuel Used (gal)	12.8	12.9	13.4	13.1	12.9	13.0

Interval #0 Information Seeding

Start Time	6:57
End Time	7:00
Total Time (min)	3

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	3	5	6	7	Avg
Vehs Entered	1138	1141	1181	1156	1132	1151
Vehs Exited	1129	1136	1175	1160	1128	1146
Starting Vehs	14	16	17	16	20	15
Ending Vehs	23	21	23	12	24	19
Travel Distance (mi)	336	334	352	340	337	340
Travel Time (hr)	18.0	18.1	19.0	18.3	18.3	18.4
Total Delay (hr)	3.6	3.7	3.8	3.6	3.7	3.6
Total Stops	1292	1329	1346	1306	1282	1312
Fuel Used (gal)	12.8	12.9	13.4	13.1	12.9	13.0

2: Level 1/2 Ent. & Entrance Lev 2 Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	3.3	3.2	0.1	1.0

3: Level 1/2 Ent. & Entrance Lev 1 Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1
Total Del/Veh (s)	1.7	0.7	0.3	0.5

5: Fore Street & Hancock Street Performance by approach

Approach	EB	WB	NE	SW	All
Denied Del/Veh (s)	0.1	0.1	0.3	0.0	0.2
Total Del/Veh (s)	4.7	4.4	7.3	6.8	6.6

8: Fore Street & Mountfort Street Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.0
Total Del/Veh (s)	8.9	0.4	0.7	1.8

11: Fore Street & Ground Level Ent. Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	9.3	1.7	0.4	1.1

14: Level 1/2 Ent. & Fore Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.3	0.0	0.1
Total Del/Veh (s)	0.8	0.5	5.9	1.0

15: Entrance Lev 2 Performance by approach

Approach	WB	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	12.4	12.4

16: Entrance Lev 1 Performance by approach

Approach	WB	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	9.7	9.7

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	11.0

Intersection: 2: Level 1/2 Ent. & Entrance Lev 2

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	26	56	27
Average Queue (ft)	9	11	1
95th Queue (ft)	29	40	11
Link Distance (ft)		95	6
Upstream Blk Time (%)	0		0
Queuing Penalty (veh)	0		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Level 1/2 Ent. & Entrance Lev 1

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	28	29
Average Queue (ft)	6	3
95th Queue (ft)	24	17
Link Distance (ft)		125
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Fore Street & Hancock Street

Movement	EB	WB	NE	SW
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	56	66	124	119
Average Queue (ft)	29	32	59	56
95th Queue (ft)	54	53	95	96
Link Distance (ft)	392	439	549	227
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Fore Street & Mountfort Street

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	101	68
Average Queue (ft)	47	9
95th Queue (ft)	83	38
Link Distance (ft)	526	126
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Fore Street & Ground Level Ent.

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	33	65
Average Queue (ft)	6	7
95th Queue (ft)	25	35
Link Distance (ft)	227	126
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 14: Level 1/2 Ent. & Fore Street

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	4	52	27
Average Queue (ft)	0	6	20
95th Queue (ft)	3	30	39
Link Distance (ft)	378	559	6
Upstream Blk Time (%)			6
Queuing Penalty (veh)			3
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: Entrance Lev 2

Movement	WB
Directions Served	T
Maximum Queue (ft)	79
Average Queue (ft)	45
95th Queue (ft)	73
Link Distance (ft)	38
Upstream Blk Time (%)	14
Queuing Penalty (veh)	15
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Entrance Lev 1

Movement	WB
Directions Served	T
Maximum Queue (ft)	62
Average Queue (ft)	34
95th Queue (ft)	60
Link Distance (ft)	38
Upstream Blk Time (%)	6
Queuing Penalty (veh)	4
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 22

Intersection: 15: Entrance Lev 2

Phase	6	8
Movement(s) Served	Hold	WBT
Maximum Green (s)	2.0	1.0
Minimum Green (s)	1.0	1.0
Recall	Max	None
Avg. Green (s)	19.7	1.0
g/C Ratio	NA	NA
Cycles Skipped (%)	0	0
Cycles @ Minimum (%)	0	100
Cycles Maxed Out (%)	100	100
Cycles with Peds (%)	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Intersection: 16: Entrance Lev 1

Phase	6	8
Movement(s) Served	Hold	WBT
Maximum Green (s)	2.0	1.0
Minimum Green (s)	1.0	1.0
Recall	Max	None
Avg. Green (s)	43.0	1.0
g/C Ratio	NA	NA
Cycles Skipped (%)	0	0
Cycles @ Minimum (%)	0	100
Cycles Maxed Out (%)	100	100
Cycles with Peds (%)	0	0

Controller Summary

Average Cycle Length (s): NA
Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:57	4:57	4:57	4:57	4:57	4:57
End Time	6:00	6:00	6:00	6:00	6:00	6:00
Total Time (min)	63	63	63	63	63	63
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1278	1279	1324	1320	1301	1298
Vehs Exited	1282	1282	1325	1308	1299	1299
Starting Vehs	33	17	17	17	16	18
Ending Vehs	29	14	16	29	18	20
Travel Distance (mi)	362	364	373	376	371	369
Travel Time (hr)	19.7	19.8	20.3	20.5	20.1	20.1
Total Delay (hr)	4.1	4.3	4.4	4.3	4.3	4.3
Total Stops	1375	1407	1433	1417	1377	1401
Fuel Used (gal)	14.1	14.3	14.6	14.7	14.4	14.4

Interval #0 Information Seeding

Start Time	4:57
End Time	5:00
Total Time (min)	3

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:00
End Time	6:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	1278	1279	1324	1320	1301	1298
Vehs Exited	1282	1282	1325	1308	1299	1299
Starting Vehs	33	17	17	17	16	18
Ending Vehs	29	14	16	29	18	20
Travel Distance (mi)	362	364	373	376	371	369
Travel Time (hr)	19.7	19.8	20.3	20.5	20.1	20.1
Total Delay (hr)	4.1	4.3	4.4	4.3	4.3	4.3
Total Stops	1375	1407	1433	1417	1377	1401
Fuel Used (gal)	14.1	14.3	14.6	14.7	14.4	14.4

2: Level 1/2 Ent. Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.4	0.0	0.0	0.1
Total Del/Veh (s)	2.5	7.6	0.4	3.9

3: Level 1/2 Ent. Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.3	0.1	0.0	0.1
Total Del/Veh (s)	2.1	0.2	0.3	0.8

5: Fore Street & Hancock Street Performance by approach

Approach	EB	WB	NE	SW	All
Denied Del/Veh (s)	0.2	0.2	0.4	0.1	0.3
Total Del/Veh (s)	5.8	6.5	9.1	7.4	7.8

8: Fore Street & Mountfort Street Performance by approach

Approach	EB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	9.0	0.7	0.8	1.5

11: Fore Street & Ground Level Ent. Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0
Total Del/Veh (s)	9.3	1.6	0.2	1.4

14: Level 1/2 Ent. & Fore Street Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.2	0.0	0.0
Total Del/Veh (s)	0.7	0.5	8.1	2.1

15: Performance by approach

Approach	WB	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	8.6	8.6

16: Performance by approach

Approach	WB	All
Denied Del/Veh (s)	0.0	0.0
Total Del/Veh (s)	7.7	7.7

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	11.4

Intersection: 2: Level 1/2 Ent.

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	34	104	24
Average Queue (ft)	26	24	1
95th Queue (ft)	32	68	12
Link Distance (ft)		110	6
Upstream Blk Time (%)	3	0	0
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Level 1/2 Ent.

Movement	EB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	22
95th Queue (ft)	41
Link Distance (ft)	
Upstream Blk Time (%)	2
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Fore Street & Hancock Street

Movement	EB	WB	NE	SW
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	72	106	153	116
Average Queue (ft)	33	47	61	58
95th Queue (ft)	59	79	114	95
Link Distance (ft)	386	447	535	215
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Fore Street & Mountfort Street

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	83	74
Average Queue (ft)	37	20
95th Queue (ft)	67	59
Link Distance (ft)	526	142
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Fore Street & Ground Level Ent.

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	66	22
Average Queue (ft)	26	1
95th Queue (ft)	55	11
Link Distance (ft)	227	142
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 14: Level 1/2 Ent. & Fore Street

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	9	48	68
Average Queue (ft)	0	4	42
95th Queue (ft)	6	24	65
Link Distance (ft)	378	559	6
Upstream Blk Time (%)			29
Queuing Penalty (veh)			51
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15:

Movement	WB
Directions Served	T
Maximum Queue (ft)	54
Average Queue (ft)	19
95th Queue (ft)	48
Link Distance (ft)	38
Upstream Blk Time (%)	2
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

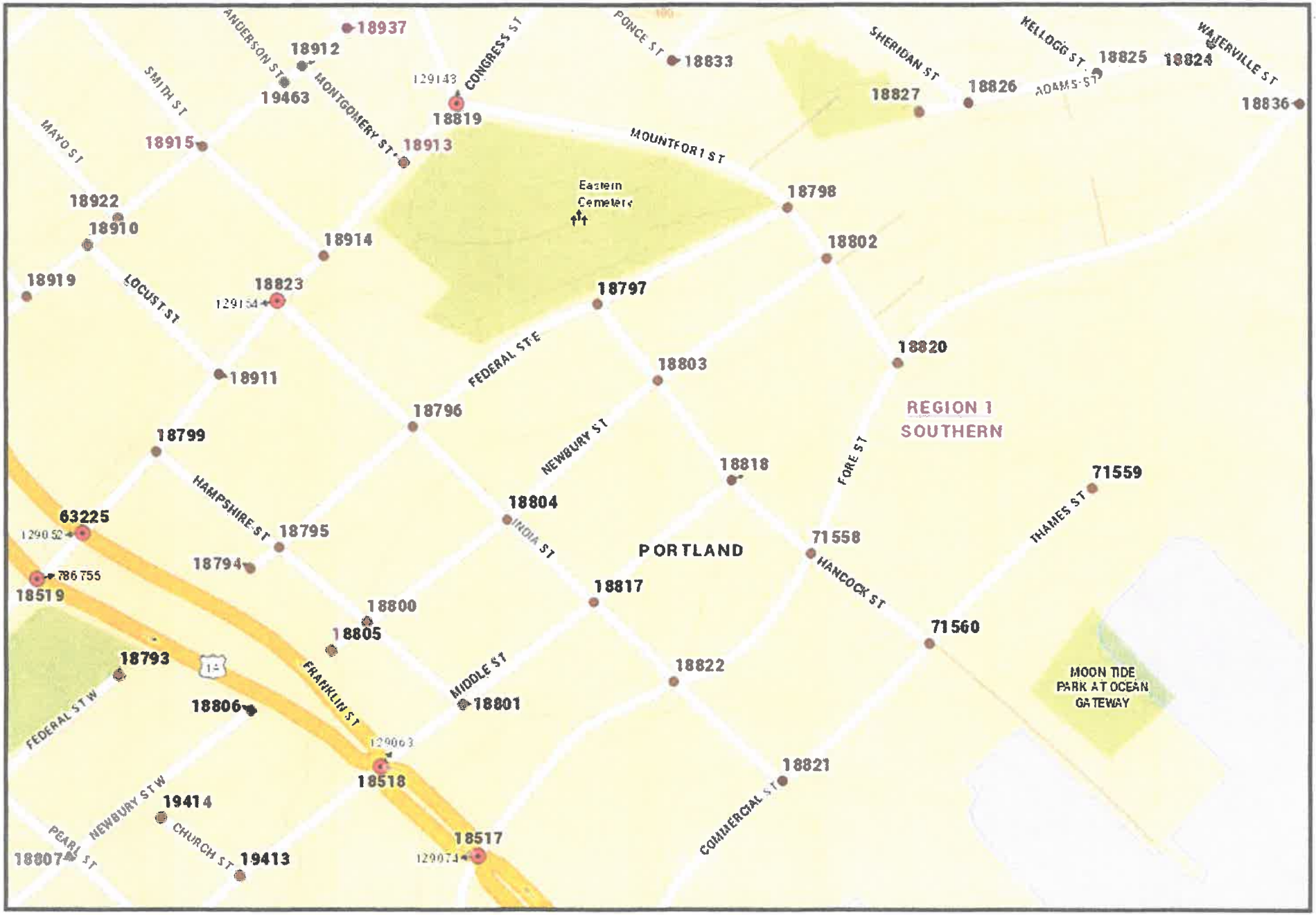
Intersection: 16:

Movement	WB
Directions Served	T
Maximum Queue (ft)	44
Average Queue (ft)	8
95th Queue (ft)	32
Link Distance (ft)	40
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 52

DEFAULT TITLE FROM MAP DOCUMENT



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0.1 Miles

1 inch = 0.07 miles

Date: 8/14/2017
Time: 9:16:53 AM

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☐ 1320 Summary

REPORT DESCRIPTION

Franklin St Middle St area in Portland

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

Route: 0001A	Start Node: 15397	Start Offset: 0	☐ Exclude First Node
	End Node: 18518	End Offset: 0	☐ Exclude Last Node
Route: 001AS	Start Node: 18518	Start Offset: 0	☑ Exclude First Node
	End Node: 18517	End Offset: 0	☑ Exclude Last Node
Route: 001AS	Start Node: 18517	Start Offset: 0	☑ Exclude First Node
	End Node: 15397	End Offset: 0	☑ Exclude Last Node
Route: 0561000	Start Node: 18823	Start Offset: 0	☐ Exclude First Node
	End Node: 18821	End Offset: 0	☐ Exclude Last Node
Route: 0560286	Start Node: 18822	Start Offset: 0	☑ Exclude First Node
	End Node: 18517	End Offset: 0	☑ Exclude Last Node
Route: 0560286	Start Node: 71558	Start Offset: 0	☑ Exclude First Node
	End Node: 18822	End Offset: 0	☑ Exclude Last Node
Route: 0560286	Start Node: 18820	Start Offset: 0	☐ Exclude First Node
	End Node: 71558	End Offset: 0	☑ Exclude Last Node
Route: 0560505	Start Node: 18518	Start Offset: 0	☑ Exclude First Node
	End Node: 18817	End Offset: 0	☑ Exclude Last Node
Route: 0560505	Start Node: 18817	Start Offset: 0	☑ Exclude First Node
	End Node: 18818	End Offset: 0	☑ Exclude Last Node
Route: 0560344	Start Node: 18818	Start Offset: 0	☐ Exclude First Node
	End Node: 71560	End Offset: 0	☐ Exclude Last Node

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☑ Crash Summary I ☐ Section Detail ☑ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☐ 1320 Summary

REPORT DESCRIPTION

Franklin St Middle St area in Portland

REPORT PARAMETERS

Year 2015, Start Month 1 through Year 2017 End Month: 12

Route: **0561001**	Start Node: **15397**	Start Offset: **0**	☑ **Exclude First Node**
	End Node: **18821**	End Offset: **0**	☑ **Exclude Last Node**
Route: **0560524**	Start Node: **18819**	Start Offset: **0**	☐ **Exclude First Node**
	End Node: **18820**	End Offset: **0**	☑ **Exclude Last Node**

Crash Summary I

Nodes

Node	Route - MP	Node Description	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
15397	0001A - 11.81	Int of COMMERCIAL ST FRANKLIN ST MAINE STATE PIER	9	10	0	1	0	4	5	50.0	4.912	0.68 (Statewide Crash Rate: 0.74)	1.28	0.00
18518	0001A - 11.95	Int of FRANKLIN ST MIDDLE ST	9	20	0	0	1	6	13	35.0	5.305	1.26 (Statewide Crash Rate: 0.74)	1.26	0.00
18517	0001A - 11.89	Int of FORE ST FRANKLIN ST	9	7	0	0	1	2	4	42.9	4.920	0.47 (Statewide Crash Rate: 0.74)	1.28	0.00
18796	0561000 - 0.08	Int of FEDERAL ST E INDIA ST	2	3	0	0	0	1	2	33.3	2.124	0.47 (Statewide Crash Rate: 0.16)	0.49	0.00
18823	0561000 - 0	Int of CONGRESS ST INDIA ST	9	11	0	0	1	3	7	36.4	3.875	0.95 (Statewide Crash Rate: 0.74)	1.35	0.00
18817	0561000 - 0.18	Int of INDIA ST MIDDLE ST	2	5	0	0	1	1	3	40.0	2.569	0.65 (Statewide Crash Rate: 0.16)	0.47	1.39
18804	0561000 - 0.13	Int of INDIA ST NEWBURY ST	2	2	0	0	0	0	2	0.0	2.096	0.32 (Statewide Crash Rate: 0.16)	0.49	0.00
18822	0561000 - 0.23	Int of FORE ST INDIA ST	2	1	0	0	0	1	0	100.0	4.377	0.08 (Statewide Crash Rate: 0.16)	0.41	0.00
18821	0561000 - 0.29	Int of COMMERCIAL ST INDIA ST THAMES ST	2	0	0	0	0	0	0	0.0	2.941	0.00 (Statewide Crash Rate: 0.16)	0.45	0.00
18820	0560286 - 0.28	Int of FORE ST MOUNTFORT ST	2	1	0	0	1	0	0	100.0	2.189	0.15 (Statewide Crash Rate: 0.15)	0.46	0.00
18801	0560505 - 0.33	0509221 POR,MIDDLE,HAMPSHIRE ST	2	1	0	0	0	0	1	0.0	1.004	0.33 (Statewide Crash Rate: 0.14)	0.53	0.00
18818	0560344 - 0.09	Int of HANCOCK ST MIDDLE ST	2	0	0	0	0	0	0	0.0	0.542	0.00 (Statewide Crash Rate: 0.14)	0.59	0.00
71560	0560344 - 0.19	Int of HANCOCK ST THAMES ST	2	1	0	0	0	1	0	100.0	1.236	0.27 (Statewide Crash Rate: 0.14)	0.51	0.00
71558	0560344 - 0.13	Int of FORE ST HANCOCK ST	2	3	0	0	0	1	2	33.3	1.664	0.60 (Statewide Crash Rate: 0.15)	0.50	1.21
18802	0560524 - 0.17	Int of MOUNTFORT ST NEWBURY ST	2	1	0	0	0	0	1	0.0	0.495	0.67 (Statewide Crash Rate: 0.14)	0.59	1.13
18819	0560524 - 0	Int of CONGRESS ST, MOUNTFORT ST, WASHINGTON AV	9	10	0	0	0	0	10	0.0	3.933	0.85 (Statewide Crash Rate: 0.74)	1.34	0.00
18798	0560524 - 0.14	Int of FEDERAL ST E MOUNTFORT ST	2	1	0	0	0	0	1	0.0	0.524	0.64 (Statewide Crash Rate: 0.14)	0.59	1.08
Study Years: 3.00		**NODE TOTALS:**		77	0	1	5	20	51	33.8	44.706	0.57	0.60	0.95

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
15397	18517	3123025	0 - 0.08	0001A - 11.81	0.08	2	1	0	0	0	1	0	100.0	0.00091	366.82	765.02	0.00
Int of COMMERCIAL ST FRANKLIN ST MAINE STATE PIER				US 1A											Statewide Crash Rate: 218.74		
18517	18518	3118954	0 - 0.06	0001A - 11.89	0.06	2	1	0	0	0	0	1	0.0	0.00104	321.32	741.01	0.00
Int of FORE ST FRANKLIN ST				US 1A											Statewide Crash Rate: 218.74		
18517	18518	3118912	0 - 0.06	001AS - 2.08	0.06	2	1	0	0	1	0	0	100.0	0.00103	322.20	741.51	0.00
Int of FORE ST FRANKLIN ST				US 1AS											Statewide Crash Rate: 218.74		
15397	18517	3100256	0 - 0.08	001AS - 2.14	0.08	2	2	0	0	0	0	2	0.0	0.00105	634.20	738.62	0.00
Int of COMMERCIAL ST FRANKLIN ST MAINE STATE PIER				US 1AS											Statewide Crash Rate: 218.74		
18796	18823	3106811	0 - 0.08	0561000 - 0	0.08	2	1	0	0	0	0	1	0.0	0.00159	209.04	665.06	0.00
Int of FEDERAL ST E INDIA ST				RD INV 05 61000											Statewide Crash Rate: 218.74		
18796	18804	3130049	0 - 0.05	0561000 - 0.08	0.05	2	4	0	0	0	0	4	0.0	0.00095	1402.83	756.87	1.85
Int of FEDERAL ST E INDIA ST				RD INV 05 61000											Statewide Crash Rate: 218.74		
18804	18817	3122291	0 - 0.05	0561000 - 0.13	0.05	2	1	0	0	0	0	1	0.0	0.00104	319.15	739.79	0.00
Int of INDIA ST NEWBURY ST				RD INV 05 61000											Statewide Crash Rate: 218.74		
18817	18822	3106813	0 - 0.05	0561000 - 0.18	0.05	2	0	0	0	0	0	0	0.0	0.00111	0.00	728.90	0.00
Int of INDIA ST MIDDLE ST				RD INV 05 61000											Statewide Crash Rate: 218.74		
18821	18822	3106816	0 - 0.06	0561000 - 0.23	0.06	2	0	0	0	0	0	0	0.0	0.00142	0.00	685.41	0.00
Int of COMMERCIAL ST INDIA ST THAMES ST				RD INV 05 61000											Statewide Crash Rate: 218.74		
18517	18822	3106667	0 - 0.11	0560286 - 0.45	0.11	2	5	0	0	0	0	5	0.0	0.00227	732.76	514.00	1.43
Int of FORE ST FRANKLIN ST				RD INV 05 60286											Statewide Crash Rate: 174.88		
71558	18822	4047689	0 - 0.08	0560286 - 0.37	0.08	2	1	0	0	0	0	1	0.0	0.00168	197.98	555.21	0.00
Int of FORE ST HANCOCK ST				RD INV 05 60286											Statewide Crash Rate: 174.88		
18820	71558	4047688	0 - 0.09	0560286 - 0.28	0.09	2	4	0	0	0	0	4	0.0	0.00189	703.93	538.80	1.31
Int of FORE ST MOUNTFORT ST				RD INV 05 60286											Statewide Crash Rate: 174.88		
18518	18801	194025	0 - 0.06	0560505 - 0.27	0.06	2	3	0	0	0	2	1	66.7	0.00076	1312.51	1276.78	1.03
Int of FRANKLIN ST MIDDLE ST				RD INV 05 60505											Statewide Crash Rate: 407.65		
18801	18817	194399	0 - 0.06	0560505 - 0.33	0.06	2	1	0	0	0	0	1	0.0	0.00022	1548.39	1680.04	0.00
0509221 POR,MIDDLE,HAMPSHIRE ST				RD INV 05 60505											Statewide Crash Rate: 407.65		
18817	18818	194423	0 - 0.08	0560505 - 0.39	0.08	2	0	0	0	0	0	0	0.0	0.00038	0.00	1512.63	0.00
Int of INDIA ST MIDDLE ST				RD INV 05 60505											Statewide Crash Rate: 407.65		
71558	18818	4047715	0 - 0.04	0560344 - 0.09	0.04	2	1	0	0	0	0	1	0.0	0.00018	1847.17	1719.40	1.07
Int of FORE ST HANCOCK ST				RD INV 05 60344											Statewide Crash Rate: 407.65		
71560	71558	4047714	0 - 0.06	0560344 - 0.13	0.06	2	0	0	0	0	0	0	0.0	0.00046	0.00	1442.59	0.00
Int of HANCOCK ST THAMES ST				RD INV 05 60344											Statewide Crash Rate: 407.65		
15397	18821	3106035	0 - 0.11	0561001 - 0	0.11	2	6	0	0	0	0	5	0.0	0.00268	745.48	581.29	1.28
Int of COMMERCIAL ST FRANKLIN ST MAINE STATE PIER				RD INV 05 61001											Statewide Crash Rate: 218.74		
18798	18819	194394	0 - 0.14	0560524 - 0	0.14	2	3	0	0	0	0	3	0.0	0.00071	1417.05	1301.85	1.09
Int of FEDERAL ST E MOUNTFORT ST				RD INV 05 60524											Statewide Crash Rate: 407.65		

Crash Summary I

Sections

Start Node	End Node	Element	Offset Begin - End	Route - MP	Section Length	U/R	Total Crashes	Injury Crashes K	A	B	C	PD	Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF
18798	18802	194393	0 - 0.03	0560524 - 0.14	0.03	2	0	0	0	0	0	0	0.0	0.00015	0.00	1748.98	0.00
Int of FEDERAL ST E	MOUNTFORT ST			RD INV 05 60524											Statewide Crash Rate: 407.65		
18802	18820	194401	0 - 0.05	0560524 - 0.17	0.05	2	5	0	0	0	0	3	0.0	0.00021	8124.93	1691.75	4.80
Int of MOUNTFORT ST	NEWBURY ST			RD INV 05 60524											Statewide Crash Rate: 407.65		
Study Years:	3.00			**Section Totals:**	1.48		40	0	0	1	3	33	10.0	0.02174	613.28	379.97	1.61
				Grand Totals:	1.48		117	0	1	6	23	84	25.6	0.02174	1793.84	521.86	3.44

Traffic Solutions
William J. Bray, P.E.
17 Mountview Drive
Gorham, ME 04038
(207) 400-6890
trafficsolutions@maine.rr.com

December 13, 2018

Parking Assessment
Proposed
"100 Fore Street"
Portland, Maine

INTRODUCTION

100 Fore Street, LLC is proposing to construct an 82,872 square foot office building and a multi-level parking garage that includes 3,622 square feet of retail space at 100 Fore Street in the City of Portland. The garage structure will be three-floors with 539 parking spaces. The subject property is identified as Lot 10 on City Tax Map 19, Block A.

This document determines the minimum parking requirements of the proposed project based upon the city land-use code and estimates the peak parking demand requirements of the proposed site based upon national parking trends. The proposed parking structure, with a capacity of 539 parking spaces, meets the full parking demand requirements of the site and provides a balance of spaces. The City Land-Use Code requires developments that are proposing to exceed the minimum parking requirements by 10% or more to demonstrate the additional parking is appropriate for the site. The parking report provides supporting information and discussion on the requirements for the surplus parking spaces.

PARKING REQUIREMENTS – CITY ORDINANCE

Chapter 14-332 (h) and (j) of the City's Land-use code establishes the minimum parking requirements for the proposed retail and office uses within the proposed 100 Fore Street site.

Proposed 3,622sf retail space; Chapter 14.332 (h) Retail stores require: "*One space for each two hundred (200) square feet of first floor area in excess of two thousand (2,000) square feet not used for bulk storage.*"

Proposed retail space requires a total of **8** spaces

Proposed 82,872sf office space; Chapter 14.332 (j) Offices require: "One (1) parking space for each four hundred (400) square feet, or major fraction thereof."

Proposed office space requires a total of **207** spaces

Total Minimum Parking Requirements = 215 spaces

PARKING DEMAND

Peak Parking Demand: National parking demand data presented in the Institute of Transportation Engineers (ITE) **"Parking Generation"** publication is typically the instrument used in estimating the actual parking demand of a development site. The 4th edition, which was published in 2010, represents the most current copy of the noted ITE document. The ITE manual provides "*average*" peak parking demand rates for more than 100 land-use categories including: four restaurant uses, general retail space, lodging, office space, fitness center, industrial uses, retail, etc. The following land-uses and parking demand rates were used in estimating the peak parking demand for the proposed 100 Fore Street project:

Land-Use Category 701 – Office Building = 2.84 spaces /1,000sf of building area

Land-Use Category 820 – Shopping Center = 3.76 spaces/1,000sf of building area

Based upon the presented parking space rates, the proposed office building (82,872sf) and attached retail space (3,622sf) will generate a peak parking demand of **250** spaces.

Parking Demand Adjustment: Employees of the office and retail space are expected to utilize other modes of transportation traveling to/from the proposed new site at 100 Fore Street. These other transportation modes include: transit, ridesharing, bicycle travel or walking. Employee commute data obtained for a number of communities located in the Greater Portland Region suggests that approximately **12.8%** of the employees at the new office/retail site will travel to/from work utilizing other modes of transportation. The attached document defines the assumptions and data sources applied in calculating the percentage of employees using other modes of travel to/from work. Accordingly, the adjusted peak parking demand requirement of the proposed 100 Fore Street site is **218** spaces.

PARKING SUPPLY

Parking Supply: The peak parking demand requirements of the proposed "100 Fore Street" office and retail site are accommodated with the planned construction of the 539-space parking garage. It is expected that tenants of the proposed office and retail space will be assigned reserved parking spaces on the second level of the garage and a small portion of the first level. The balance of parking spaces within the garage (539-218 = **321 spaces**) will be leased to other tenants and/or open for general public parking. It is expected that Unified Parking Partners or a similar operator will operate and manage the garage facility.

Parking Supply – City Code Requirements: Chapter 14-526.(a).4.a.iii) of the City's Land-Use Code states, "*Developments proposing to exceed minimum parking requirements by 10% or more must demonstrate through a parking analysis that the amount of parking is appropriate for the proposed use of the site.*"

The proposed 100 Fore Street project proposes to construct a parking garage with a capacity of **539** spaces. The proposed office/retail building requires a total of **218** parking spaces leaving a balance of **321** parking spaces within the parking garage.

The Applicant is constructing the additional parking spaces to meet the terms of the Purchase and Sale agreement (dated September 11, 2017) for purchase of the 1 Hancock Street (WEX) property. Article 12b of that agreement requires: "*Buyer agrees to complete within twenty-four (24) months after Closing Date, construction of (b), a combination of new surface and structured parking for between 450 and 550 parking spaces located within seven hundred fifty (750) feet from the Premises and not on the Premises, which parking*

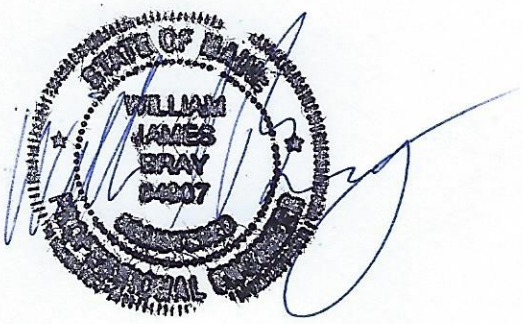
will be available for public use twenty-four (24) hours a day (the "Project"). If Buyer fails to commence construction of the Project (Including the Parking structure) within 24-months after the closing, the City shall have the right, for up to one year from that two-year anniversary, but not the obligation, to repurchase the Premises at the Purchase Price."

SUMMARY

- The proposed 100 Fore Street site, which includes an 82,872sf office building with approximately 3,622sf of retail space will generate a peak parking demand of **218** parking spaces. The parking demand estimate compares to the City's Zoning requirements of **215** spaces. The proposed project constructs a three-level parking structure on the site with a total capacity of 539 spaces.

- The City, with sale of the 1 Hancock Street (WEX) property, required the Applicant to construct new surface or structured parking for 450 to 550 spaces within 750-feet of the WEX property. The proposed parking garage at 100 Fore Street with a capacity of 539 parking spaces meets the terms of the Purchase and Sales agreement for the WEX property.

- The balance of parking spaces (approximately 321 spaces) in the proposed garage, will be leased to other tenants and/or available for general public parking.



Att. 1

Google Groups

Re: 100 Fore Street Level Site 3 Plan (540 parking spaces)

Berry Manter <berrymanter@yahoo.com> Oct 23, 2018 3:09 PM
Posted in group: **Planning Board**

To Whom it May Concern and Planning Board,

As an Eastern Promenade resident who's route through and out of the city to all destinations west and south is via Franklin Street. I have serious concerns about the impact of the added parking spaces and the work hour flow that this adds to the already bloated new business areas of India Street, new residences, and new hotels in the lower penninsula and waterfront. This represents, in combined total, a massive increase into Portland's already notable " urban rush hour" glut on this main thoroughfare in and out of the city. THIS is the time to think "FUTURE" vision of this city with longterm plans that accommodate growth.

Approving such massive parking slots ahead of creating progressive public transportation plans and placing parking locations closer to the marginal way/295 satellite lots is short sighted.

The second concern this presents is related to HOUSING. Look around the city at present. Count the parking garages of significant height, all with ocean views. These are already in great number. Such facilities replace and eliminate now desirable ground for future housing with walkable city access, which is what we all want and the city needs NOW, as noted by the current controversial transformation of Munjoy Hill where I reside.

PLEASE, NOW is the time for walkable housing and keeping the city commutable and clear of needless traffic glut — NO MORE INTOWN PARKING FACILITIES.

Thank you,

Berry Manter
46 Eastern Promenade
Portland

Att. 2

Google Groups

Proposed parking at 100 Fore Street

Pamela Day <pday2304@gmail.com> Oct 23, 2018 3:16 PM
Posted in group: **Planning Board**

Dear Planning Board Members:

We live at 25 Waterville Street in Portland. We are a very short distance from the current Hamilton Marina at 100 Fore Street. We strongly oppose putting almost 600 parking spaces on this site. Traffic in the area is already congested, especially in the summer, and street parking has become increasingly difficult. Already, people using the ferries or visiting the Old Port end up parking on our street.

In addition to its impact on traffic and parking, the idea of placing 600 parking places in this space, with its view of the waterfront, is quite incongruous with the mission of the Planning Board to preserve the waterfront for public use and enjoyment.

We urge the City and the Planning Board to pursue other options for parking, including shuttles from existing parking areas.

Sincerely,

Pamela Day & Michael Petit
25 Waterville St, Portland, ME 04101

Att. 3

Google Groups

Re: 100 Fore Street

Christian MilNeil <c.neal.milneil@gmail.com> Oct 23, 2018 3:24 PM
Posted in group: **Planning Board**

To the planning department and planning board:

If you haven't already, please take a look at the IPCC's "Summary for Policymakers" document from the recent "Special Report on Global Warming of 1.5 °C (SR15)":
http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf

The most important takeaway is essentially that we (the City of Portland, along with every other public jurisdiction on Earth) need to cut emissions in half within the next 10 years, and completely by 2040, in order to preserve the conditions necessary for civilization:

 Screen Shot 2018-10-23 at 11.18.54 AM.png
And in fact, the jurisdictions that care about these impacts (and I would hope that the City of Portland is among them) will need to act even faster, and more dramatically, to compensate from a lack of action from other jurisdictions that don't take sufficient action.

In practical terms for us, this means continuing our work to reduce heating and cooling expenditures, and increasing our use of renewable energy, both on-site and from the grid. In those sectors the data suggest that Maine and Portland are more or less on track to meet the IPCC's requirements.

But building systems and electricity are each a small component of Maine's emissions – the biggest source of greenhouse gases here comes from motor vehicle tailpipes, and those emissions are still increasing statewide.

As a city, we need to shift from a place where 80% of trips are made by automobile to a place where 80% of trips are made on foot, bike or public transit. And, if we want to preserve the legal, ecological and economic systems that enable our city to exist, we need to do this *in the next 10 years*.

These are the laws of physics; let's now turn to the zoning laws of the City of Portland, where, contrary to the threats we face, businesses like Wex are still being required to build hundreds of parking spaces in a downtown location with abundant access to bike routes, walkable neighborhoods, buses and ferry routes.

I understand that the Planning Board does not have the authority to demand that Jonathan Cohen redesign his project for the car-free future we urgently need to build. And I don't expect Wex, a company in the business of facilitating gasoline purchases, to take bold leadership here.

Rather, this example, and the thousands of additional parking garage spaces currently being planned in our downtown, should serve as an urgent warning that the city's planning staff need to come up with new policies, *now*, that give our city a fighting chance of staying above water.

This case – where a developer is proposing a structure to hold 600 climate-baking machines in a location that will almost certainly be flooded by mid-century if other developers continue to follow the same example – serves as a clear wake-up call to how out-of-date and self-destructive Portland's current zoning and transportation policies are.

We need you to do better.

Yours,
Christian MilNeil
45 Smith Street

- - - - - - - - - - - - -
double u double u double u dot christianmilneil dot com

Google Groups

10/23/2018- Planning Board Workshop - 100 Fore St Proposal Concerns

Karen Snyder <karsny@yahoo.com> Oct 30, 2018 11:50 AM
Posted in group: **Planning Board**

Dear Planning Board members,

It is disappointing the comments heard from City Planning Staff in the 10/23/2018 Planning Board Workshop regarding 100 Fore Street project. These comments were:

- Planning Dept, Director of City Planning, Tuck O'Brien said the discussion of traffic will be deferred until next meeting. We have now heard at least for the last 6 months the same comments from the City Planning Dept and/or Traffic Coordinator that there is a traffic study in place or at TDM plan is being worked on.
  -This is appears now to be purely a delay tactic by City Government in order to allow these developments to continue putting up all these parking spaces down at the waterfront for 86 Newbury (360 parking spaces)-Brew Hotel and Vet Choice, 100 Fore Str (540 parking spaces) which appears to be the parking garage for Wex employees, 58 Fore Street (600 parking spaces). Yet the city employees continue to say there is a traffic study and TDM plan being conducted with no detail. This issue needs to be addressed now and stop pushing it off.
- Planning Dept Urban Designer, Caitlin Cameron, stating that the "urban experience" wants higher story buildings on Fore St. Actually, NO, we urban pedestrians/Munjoy Hill residents don't want to walk down Fore Street with the current open space we have now to a valley wall of buildings looming over Fore St especially when the zoning height changed amidst our protests. This proposed development needs to remain having the structure at 1 store at Fore St level (as proposed by the developer) and NOT 2 story as Cameron is suggesting. In addition, these comments by Caitlin seem counter intuitive to the new Comprehensive Plan about respecting "open spaces" as the City continues to block waterfront access and views by taller buildings which continue to get zoning height waivers.

However, the things that are positive about this project.

1) The building height is not one massive cube but is set back staggered from Fore Street and not creating a valley wall for pedestrians/Munjoy Hill residents walking down Fore Street. Again, we disagree with Caitlin Cameron's statement, about a better "urban experience" if this development has 2 stories at Fore Street level. As actual "urban pedestrian and residents', many of us residents fell it is better at 1 story as the developer presented at the Fore Street level and not 2 stories as being urged by Caitlin Cameron of the Planning Dept.
2) The open space feeling of the pedestrian plaza and vegetation of street trees appears good. However, have them use Maine native trees instead of non-native Maine trees.

The concerning things about this project.

http://portlandmaine.gov/AgendaCenter/ViewFile/Item/6791?fileID=38380

1) It does appear to be basically a glorified parking garage of 540 parking spaces with a couple of distractions of retail and offices to support WEX employees. The City continues to do nothing to actually address affordable housing, the massive build up of parking spaces, or future traffic congestion on the waterfront. The City employees need to stop delaying these critical issues or City government will blamed for ruining Portland's livability at their continuous acquiescing to developers.
2) There is continued great concern from Munjoy Hill residents how this traffic/parking will affect Munjoy Hill neighborhood streets which still have basically not been addressed. Since the City seems to want to NOT do anything stop these 1,300 parking spaces from being built, how to ensure that conduit of cars streaming to Wex, Vet Choice, and 100 Fore St traffic will NOT come from East End Prom or other Munjoy Hill neighborhood streets which were not made to be heavy trafficked arterials?
3) The building design is very generically modern with a color palette of that bright blue which is reminiscent of an IKEA building. Portland, ME is one of the oldest seaport cities in the US and instead of respecting or wrapping in historical aspects to the building, it feels like the modern color scheme conflicts next to residential neighborhoods built in the 1800's. Even the Residence Inn across the

street, respects the history of Portland to some respect with it's brick facade. Maybe if the circulation towers were brick façade and the bright blue changed to brick or a muted color, it would make more acceptable. Metal and brick does go with the Portland's history.
4) This development abuts a densely populated Munjoy Hill residential zone The commercial lighting of this development needs to be directed away from residential properties, especially at night.
5) There is also concern regarding commercial day noise and night noise disturbances after 10pm since this is a large non-residential development so close to residential neighborhoods. How will this development and the City ensure the noise disturbances next to residential housing is kept to a minimum?

In conclusion, I know many of residents have sent emails their concerns of this development and the other developments being currently developed close to the waterfront. It needs to be impressed on the City Mgr, City Councilors, Planning Department staff, Planning Board that turning Portland into another Boston is NOT what Portland residents think is a good thing. These developments need to stop being allowed zoning changes by Planning Board/City Councilors and start respecting Portland's history rather than erasing it's history in turn making the city less livable for it's residents. It is the responsibility of the City Manager, City Councilors, and City Staff such as Portland Planning Dept and Planning Board to balance development with Portland's history and livability to ensure it is not erased by "progress". People come here because it doesn't look like where they come but that is being changed by the City government putting developers greed above residents needs.

Regards,

Karen Snyder
Munjoy Hill Resident/Property Owner

Google Groups

Traffic and Parking on Munjoy Hill

Nancy Thayer <nancy.thayer1@gmail.com> Nov 26, 2018 9:51 AM
Posted in group: **Planning and Urban Development**

Hello,
I am an owner of a home on Munjoy Hill and there has been no information regarding what you are planning to do with traffic congestion. It is so bad now, that I can't even imagine what it will be like when WEX and Vets First Choice are up and running. Everyone takes short cuts through our neighborhoods and even now I see people park their car on the hill and walk to work. Could you please post zoning on Munjoy Hill? Permit parking? Or two hour limit to stop all the parking already happening here? Residents can't even find places to park.

Thank you.

Nancy Thayer
7 Gilbert Lane

Google Groups

traffic patterns

Kris Lape <krislape@aol.com> Nov 26, 2018 8:52 AM
Posted in group: **Planning Board**

Hello,
I'm concerned about the amount of parking spaces being built around the Fore Street area, without a plan for the amount of traffic it will create. We certainly need more parking everywhere on the peninsula, so I am not opposed to new parking garages.
I am worried about the traffic flow in and out the this area, that is now growing by leaps and bounds.
I live on Saint Lawrence Street. It is one of the few streets that offers a complete passage from Fore Street to Congress Street, aside from Franklin Arterial. I don't want our pedestrian, dog and child friendly street to become overwhelmed with traffic in and out of the Fore Street hub.
I am asking the planning board to work, brainstorm, and make longterm plans for the safest and most reasonable flow of cars in this area, that would avoid neighborhood streets.
I appreciate your consideration.

Kris Lape

Kris Lape
Kris Lape Designs
krislape@aol.com
207-592-3484

The square foot of a soul

LEVEL III SITE DEVELOPMENT PLANS

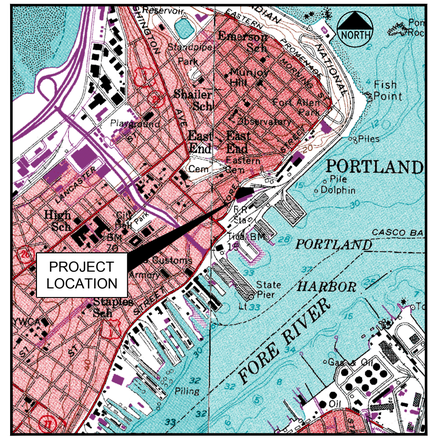
FOR A 539± SPACE PARKING GARAGE & COMMERCIAL OFFICE BUILDING (83,041 SF±) AND ANCILLARY RETAIL ON

100 FORE STREET PROPERTY

PORTLAND, MAINE

DECEMBER 2018

PERMIT SET



LOCATION MAP
N.T.S.

TAX MAP - BLOCK - LOT (ADDRESS)

19-BLOCK A - LOT 10
CCRD BOOK 33748, PAGE 1
100 FORE STREET
PORTLAND, MAINE

CURRENT APPLICANT/DEVELOPER/OWNER

100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN
CCRD BOOK 53748, PAGE 1

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C-3.1 PLAZA SITE & GRADING PLAN BLOW UP
C-3.2 FORE STREET SIDEWALK SITE & GRADING PLAN BLOW UP
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C-6.6 MISCELLANEOUS DETAILS

I HEREBY ACKNOWLEDGE THAT THESE PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MAINE AND THAT I AM COMPETENT TO PREPARE THIS DOCUMENT.

UTILITIES

WATER:
PORTLAND WATER DISTRICT
22 DOUGLASS STREET
P.O. BOX 3553
PORTLAND, MAINE 04104
207.774.5961
CONTACT: ROBERT BARTELLS

SEWER / STREETS:
CITY OF PORTLAND
PUBLIC SERVICES DIVISION
55 PORTLAND STREET
PORTLAND, MAINE 04102
207.874.8846
CONTACT: BRAD ROLAND, P.E. -
SENIOR PROJECT ENGINEER

ELECTRIC:
CENTRAL MAINE POWER
162 CANCO ROAD
PORTLAND, MAINE 04103
207.842.2367
CONTACT: JAMIE COUGH/PAUL DUPERRE

TELEPHONE:
CONSOLIDATED COMMUNICATIONS
5 DAVIS HILL FARM ROAD
PORTLAND, MAINE 04103
207.797.1866
CONTACT: PATRICK MORRISON

NATURAL GAS:
NORTHERN UTILITIES
1075 FOREST AVENUE
PORTLAND, MAINE 04103
207.541.2570
CONTACT: CRAIG CAMPBELL /
SCOTT CARPENTER
cell 207.650.6716

CABLE:
TIME WARNER CABLE/SPECTRUM
COMMUNICATIONS
115 JOHNSON ROAD
PORTLAND, MAINE 04102
207.253.2324
CONTACT: MARK PELLETIER

DIG SAFE:
CALL BEFORE YOU DIG
888.344.7233

PERMITS / APPROVALS

TYPE:	GOVERNING BODY:	STATUS/DATE ISSUED:
LOCAL		
SITE PLAN/LEVEL III APPROVAL:	CITY OF PORTLAND PLANNING AUTHORITY CITY HALL, CONGRESS STREET PORTLAND, MAINE 04103 207.874.8722	LEVEL III SITE PLAN SUBMISSION FILED WEEK OF 10.08.18 UPDATED PLAN SUBMISSION FILED WEEK OF 11.05.18 FINAL PLAN SUBMISSION WEEK OF 12.17.18
BUILDING PERMIT:	CITY OF PORTLAND CODE ENFORCEMENT OFFICE CITY HALL, CONGRESS STREET PORTLAND, MAINE 04103 207.874.8900	TO BE FILED BY BUILDING CONTRACTOR
UTILITY / STREET OPENING PERMITS:	CITY OF PORTLAND PUBLIC SERVICES DIVISION 55 PORTLAND STREET PORTLAND, ME 04102 207.874.8801	TO BE FILED PRIOR TO CONSTRUCTION BY BUILDING CONTRACTOR
TRAFFIC MOVEMENT PERMIT:	CITY OF PORTLAND PLANNING AUTHORITY CITY HALL, CONGRESS STREET PORTLAND, MAINE 04103	A TRAFFIC MOVEMENT PERMIT IS NOT REQUIRED TRAFFIC STUDY SUBMITTED AS PART OF LEVEL III APPLICATION - APPLICANT IS PARTICIPATING IN CITY SPONSORED AREA WIDE TMP AS OF NOV. 1, 2018

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Consultants
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By	Appd.	YY.MM.DD	Revision
SRB	SRB	18.12.17	7 FINAL PLAN SUBMISSION TO CITY
SRB	SRB	18.11.30	6 LEVEL III RE-SUBMISSION TO CITY
SRB	SRB	18.11.14	5 PROGRESS PRINTS RELEASED TO CONTRACTOR
SRB	SRB	18.11.09	4 LEVEL III RE-SUBMISSION TO CITY
SRB	SRB	18.10.09	3 LEVEL III SUBMISSION TO CITY
SRB	SRB	18.09.24	2 PROGRESS SET
SRB	SRB	18.09.14	1 INTERNAL REVIEW

File Name: 195350450_cov	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
COVER SHEET

Project No. 210801622
Scale N.T.S.
Sheet C-1.0

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GENERAL NOTES:

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF ALL REGULATIONS ADMINISTERED BY THE LOCAL UTILITY COMPANIES AND THE CITY OF PORTLAND.
2. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF THE ENTRANCES, EXITS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE POINTS.
3. ALL REQUIRED AND NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND THE FINAL SERVICE CONNECTIONS.
4. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR THE ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE (1-888-DIGSAFE), IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS, AT NO EXTRA EXPENSE TO THE OWNER.
5. MAINTENANCE OF EROSION CONTROL MEASURES IS OF PARAMOUNT IMPORTANCE TO THE OWNER AND THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ONSITE INSPECTIONS OF THE OWNER OR THEIR REPRESENTATIVES AT NO ADDITIONAL COST TO THE OWNER.
6. ALL MATERIAL SCHEDULES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL PREPARE HIS OWN MATERIAL SCHEDULES BASED UPON HIS PLAN REVIEW. ALL SCHEDULES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS OR PERFORMING WORK.
7. ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO PROJECT CONTRACT SPECIFICATIONS, AND THE CITY OF PORTLAND TECHNICAL MANUAL STANDARDS, WHICHEVER IS MORE STRINGENT.
8. TOPOGRAPHIC SURVEY INFORMATION WAS PROVIDED BY OWEN HASKELL, INC. BENCHMARK = STREET SIDE HYDRANT BONNET BOLT ON FORE STREET, ELEVATION 30.68, NGVD 1929 DATUM.
9. FEMA MAP COMMUNITY PANEL NUMBER 2300510014B. THE SITE IS LOCATED IN A C ZONE.
10. THE PROPERTY SHOWN ON THIS PLAN MAY BE DEVELOPED AND USED ONLY AS DEPICTED IN THIS APPROVED PLAN. ALL ELEMENTS AND FEATURES OF THE PLAN AND ALL THE PROPERTY WHICH APPEARS IN THE RECORD OF THE PLANNING BOARD PROCEEDINGS ARE CONDITIONS OF THE APPROVAL. NO CHANGE FROM THE CONDITIONS OF APPROVALS IS PERMITTED UNLESS AN AMENDED PLAN IS FIRST SUBMITTED TO AND APPROVED BY THE PLANNING AUTHORITY.
11. ALL SIGNAGE SHALL CONFORM TO THE STANDARDS FOR SIZE, HEIGHT, LOCATION AND REFLECTIVITY SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
12. ALL CURB SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS AS NOTED ON THE PLANS:
    GRANITE AND BITUMINOUS CONCRETE CURB SHALL MEET THE REQUIREMENTS OF MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS 609.03 AND 609.04 AND CITY OF PORTLAND TECHNICAL STANDARDS.
13. ALL DIMENSIONING UNLESS OTHERWISE NOTED IS TO THE FACE OF CURB OR FACE OF BUILDING.
14. THE FACILITY IS SERVICED BY PUBLIC WATER, SEWER, NATURAL GAS AND OVERHEAD POWER. THE PROJECT INCLUDES UPDATES TO THE POWER SERVICE INCLUDING THE INSTALLATION OF NEW UNDERGROUND SYSTEM. SEE SITE ELECTRICAL PLANS FOR DETAILS.

PERMITTING NOTES:

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF THE SITE PLAN REVIEW PERMIT FROM THE CITY OF PORTLAND WHICH WILL BE MADE A PART OF THE CONTRACT BID DOCUMENTS. THE CONSTRUCTION WILL BE GOVERNED BY THE ZONING ORDINANCES WHICH ARE AVAILABLE FOR VIEWING AT THE OFFICE OF THE ENGINEER OR THE MUNICIPAL OFFICE.

SITE PLAN REVIEW: (CONDITION OF APPROVAL)

1. TBD - WILL BE ADDED TO FINAL PLANS ISSUED PRIOR TO CONSTRUCTION.

GRADING AND DRAINAGE NOTES:

1. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF n = 0.013 OR LESS. UNLESS A SPECIFIC PIPE MATERIAL IS CALLED FOR ON THE CONTRACT DRAWINGS. PVC PIPING SHALL NOT BE USED IN AREAS OF EXPOSED SUNLIGHT.
2. SLOPE PROTECTION IS TO BE PROVIDED PER THE DESIGN PLANS AND MAY INCLUDE RIPRAP, SOD OR MULCH.
3. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION DURING EARTHWORK OPERATIONS TO INSURE THAT DISTURBANCE TO ANY STEEP SLOPE AREAS ARE MINIMIZED TO THE EXTENT PRACTICABLE.
4. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY OTHERS. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (1-888-DIGSAFE) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.
5. ALL PAVING WITHIN THE PUBLIC R.O.W. SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF PORTLAND RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN THE PUBLIC R.O.W.
6. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.
7. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.
8. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES AND PHYSICAL FEATURES THAT ARE OUTSIDE THE SCOPE OF WORK. THE CONTRACTOR SHALL MAINTAIN SITE STABILITY DURING CONSTRUCTION TO AVOID EROSION AND SEDIMENT TRANSPORT. CONTRACTOR SHALL RESTORE ALL AREAS TO A FINAL STABILIZED CONDITION AS DIRECTED BY DESIGN DRAWINGS.
9. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
10. EXTERIOR GRADES AROUND PROPOSED STRUCTURE SHALL BE COORDINATED WITH FINAL BUILDING PLANS AND PROVIDE FOR ALL ACCESS OPENINGS.
11. SUBGRADE FILL PLACED BENEATH ALL PERMANENT PAVEMENT, SIDEWALK OR CONCRETE SURFACES EXCLUDING ANY BUILDING AREAS, SHALL BE STRUCTURAL FILL OR GRAVEL BORROW PER THE GEOTECHNICAL REPORT. SUBGRADE FILL PLACED BENEATH ALL LANDSCAPE AREAS EXCEPT THOSE ADJACENT THE FOUNDATION SYSTEMS MAY BE A COMMON BORROW MATERIAL SUITABLE FOR EMBANKMENT CONSTRUCTION, FREE FROM FROZEN MATERIAL, PERISHABLE RUBBLE, PEAT, ORGANICS, ROCKS LARGER THAN 12" IN DIAMETER, VEGETATION AND OTHER MATERIAL UNSUITABLE FOR ROADWAY AND SUBGRADE CONSTRUCTION. EXCAVATED ON-SITE MATERIALS MAY BE USED FOR FILL PROVIDED THE MATERIAL IS FREE FROM UNSUITABLE MATERIAL DESCRIBED IN THIS NOTE AND UPON APPROVAL OF THE ENGINEER. EXCAVATED ONSITE MATERIALS MAY NOT BE USED AS COMPACTED STRUCTURAL FILL BENEATH THE BUILDING AREAS OR AS FOUNDATION BACKFILL. GRANULAR BORROW AND COMMON BORROW SHALL COMPLY WITH THE MDOT SPECIFICATIONS.
12. ALL FILLS SHALL BE PLACED IN LAYERS NOT MORE THAN 12" LOOSE DEPTH AND COMPACTED BY HEAVY COMPACTION EQUIPMENT. MINIMUM COMPACTION SHALL BE 95% OF MAXIMUM DENSITY ASTM 1557, MODIFIED AND FIELD DENSITY ASTM D2922 (NUCLEAR METHODS).
13. THE CONTRACTOR SHALL ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED DURING CONSTRUCTION AND SHALL INCLUDE SUFFICIENT COSTS WITHIN THEIR BID TO PROVIDE DEWATERING AS NECESSARY. NO SEPARATE PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR DEWATERING.

UTILITY NOTES:

1. ALL REQUIRED UTILITIES SERVING THE PROJECT SHALL BE COORDINATED BETWEEN THE SITE WORK CONTRACTOR AND MEP CONTRACTOR(S). THE SITE WORK CONTRACTOR SHALL BE RESPONSIBLE TO EXTEND ALL PROPOSED UTILITIES TO WITHIN FIVE (5) FEET OF THE BUILDING TO A LOCATION COORDINATED WITH THE MECHANICAL AND ELECTRICAL SUBCONTRACTORS. THE BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITIES WITHIN FIVE (5) FEET AND INSIDE THE BUILDING OR UNDER SLAB.
2. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF AND/OR RELOCATION OF OVERHEAD AND UNDERGROUND TELEPHONE WITHCONSOLIDATED COMMUNICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUITS, PULL WIRES, TRENCHING AND BACKFILLING NECESSARY TO COMPLETE THE WORK.
3. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRIC SERVICE WITH CENTRAL MAINE POWER; THE TELECOMMUNICATIONS SERVICE WITH CONSOLIDATED COMMUNICATIONS AND CABLE SERVICE WITH SPECTRUM CABLE. ALL WORK SHALL CONFORM TO THE PROJECT SPECIFICATIONS OR UTILITY COMPANY STANDARDS, WHICHEVER IS MORE STRINGENT.
4. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE AT NO ADDITIONAL EXPENSE TO THE OWNER.
5. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
6. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO COMPLETION OF THE PROJECT.
7. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL, AT NO EXTRA EXPENSE TO THE OWNER.
8. A 10 FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. A 12 INCH OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER AND SANITARY SEWER CROSSINGS.
9. THE CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO THE JOBSITE. TEMPORARY SERVICES SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. COORDINATE ALL TEMPORARY SERVICES WITH UTILITY COMPANY, OWNER AND AFFECTED BUSINESSES.
10. CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY ELECTRICAL SERVICES IN CONDUIT TO SITE LIGHTING, COMPLYING WITH APPLICABLE CODES. COORDINATE WITH OWNER, SITE ELECTRICAL, ARCHITECTURAL AND CMP PLANS.
11. ALL SANITARY SERVICES AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT. ALL SANITARY SERVICES AND APPURTENANCES TO BE ABANDONED SHALL BE PROPERLY RECORDED WITH PORTLAND PUBLIC WORKS ENGINEERING DEPARTMENT. A DIGITAL VIDEOTAPE SHALL BE MADE OF SANITARY SEWER SYSTEMS TO BE UTILIZED PRIOR TO CONSTRUCTION; UPSTREAM PIPES INTENDED FOR ABANDONMENT SHALL BE INSPECTED TO VERIFY THAT THEY NO LONGER SERVE OTHER FACILITIES.

EROSION CONTROL NOTES:

THE PROJECT SITE IS RELATIVELY SMALL AND WILL PRIMARILY FEATURE BELOW GROUND EXCAVATION THAT WILL RESULT IN AN INTERNALLY DRAINING RUNOFF PATTERN. NEARLY THE ENTIRE PROJECT SITE WILL BE STABILIZED BY ROOFTOP, PAVEMENT, OR BRICK SIDEWALKS.

THE PRIMARY EMPHASIS OF THE EROSION AND SEDIMENTATION CONTROL PLAN TO BE IMPLEMENTED FOR THIS PROJECT IS AS FOLLOWS:

1. PLANNING THE PROJECT TO PROVIDE THE ABILITY TO CAPTURE ANY ERODED MATERIALS FROM THE WORK AREA ON THE SITE.
2. DEVELOPMENT OF A CAREFUL CONSTRUCTION SEQUENCE.
3. RAPID STABILIZATION OF DENUDED AREAS TO MINIMIZE THE PERIOD OF SOIL EXPOSURE.
4. PREVENTING SEDIMENT LADEN RUNOFF FROM ENTERING THE EXISTING STORM DRAIN NETWORK ON AND AROUND THE SITE.
5. KEEPING SURROUNDING STREETS FREE OF MUD AND DUST BY REGULARLY SWEEPING.

EROSION/SEDIMENTATION CONTROL DEVICES

AS PART OF THE SITE DEVELOPMENT THE CONTRACTOR WILL IMPLEMENT THE FOLLOWING EROSION AND SEDIMENT CONTROL DEVICES. THESE DEVICES SHALL BE INSTALLED AS INDICATED ON THE PLANS OR AS DESCRIBED HEREIN. FOR FURTHER REFERENCE, SEE THE "MAINE EROSION AND SEDIMENT CONTROL BMPS" HANDBOOK PUBLISHED BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

1. SILTATION FENCE SHALL BE INSTALLED DOWN SLOPE OF ANY DISTURBED AREAS TO TRAP RUNOFF-BORNE SEDIMENTS UNTIL THE SITE IS REVEGETATED. THE SILT FENCE SHALL BE INSTALLED PER THE DETAIL PROVIDED IN THE PLAN SET AND INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. THE CONTRACTOR SHALL MAKE REPAIRS IMMEDIATELY IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THE FENCE LINE. PROPER PLACEMENT OF STAKES AND KEYING THE BOTTOM OF THE FABRIC INTO THE GROUND ARE CRITICAL TO THE FENCE'S EFFECTIVENESS. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM. THE SILTATION FENCE SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED.
2. CATCH BASIN INLET PROTECTION: STONE SEDIMENT TRAPS OR A PREMANUFACTURED SILTSACK™ WILL BE INSTALLED AT CATCH BASIN INLETS TO PREVENT SILT FROM ENTERING THE STORM DRAIN SYSTEM. INSTALLATION DETAILS ARE PROVIDED IN THE PLAN SET. INLET PROTECTION SHALL REMAIN IN PLACE AND PROPERLY MAINTAINED UNTIL TRIBUTARY AREAS ARE PERMANENTLY STABILIZED.

TEMPORARY EROSION & SEDIMENTATION CONTROL MEASURES

ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. THE FOLLOWING ARE PLANNED AS TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION:

1. SILTATION FENCE AND CATCH BASIN INLET PROTECTION AS DESCRIBED ABOVE.
2. IF OPERATIONS DURING WET MONTHS RESULT IN TRACKING OF MUD OFF THE SITE ONTO PUBLIC ROADS, ROADS SHALL BE SWEPT AT LEAST ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. WHERE CHRONIC MUD TRACKING OCCURS, A STABILIZED CONSTRUCTION ENTRANCE SHOULD BE PROVIDED.
3. IF OPERATIONS DURING DRY MONTHS RESULT IN FUGITIVE DUST EMISSION, ADJACENT ROADS SHALL BE SPRAYED WITH WATER ONCE A WEEK OR MORE FREQUENTLY, AS NEEDED.
4. STABILIZE WITH MULCH OR OTHER NON-ERODIBLE COVER ANY SOILS THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS.
5. LITTER, CONSTRUCTION DEBRIS, AND CHEMICALS MUST NOT BE STORED IN A MANNER THAT WILL CREATE A POLLUTANT SOURCE IF EXPOSED TO STORMWATER RUNOFF.

TIMING AND SEQUENCE OF EROSION/SEDIMENTATION CONTROL MEASURES

THE FOLLOWING BASIC CONSTRUCTION SEQUENCE SHALL BE REQUIRED TO ENSURE THE EFFECTIVENESS OF THE EROSION AND SEDIMENTATION CONTROL MEASURES IS OPTIMIZED. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SPECIFIC CONSTRUCTION SCHEDULE, WHICH SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER.

NOTE: FOR ALL GRADING ACTIVITIES, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO OVEREXPOSE THE SITE BY LIMITING THE DISTURBED AREA.

1. INSTALL PERIMETER SILTATION FENCE & CATCH BASIN INLET PROTECTION. THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE AND FUGITIVE DUST EMISSIONS DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS.
2. CLEAR AND GRUB THE WORK AREA FOR THE BUILDING, HAUL OFF THE LOAM, AND EXCAVATE FOR THE BUILDING FOUNDATION.
3. CONSTRUCT THE DRAINAGE SYSTEM.
4. INSTALL STONE AND HAY BALE CHECK DAMS AT ANY CONCENTRATED FLOW DISCHARGE POINTS.
5. INSTALL SIDEWALKS AND PAVEMENT AS DETAILED ON THE SITE PLANS.
6. REMOVE ALL TEMPORARY EROSION CONTROL DEVICES ONCE THE SITE IS STABILIZED.

PROVISIONS FOR MAINTENANCE OF THE EROSION/SEDIMENTATION CONTROL FEATURES

DURING CONSTRUCTION OF THE BUILDING AND ASSOCIATED SITE DEVELOPMENT THE CONTRACTOR SHALL BE REQUIRED TO PERFORM THE FOLLOWING:

1. INSPECTION OF THE PROJECT WORK SITE ON A WEEKLY BASIS AND AFTER EACH SIGNIFICANT RAINFALL EVENT (0.5 INCH OR MORE WITHIN ANY CONSECUTIVE 24-HOUR PERIOD) DURING CONSTRUCTION UNTIL THE SITE HAS BEEN PERMANENTLY STABILIZED. INSPECTION OF THE PROJECT WORK SITE SHALL INCLUDE:
   - IDENTIFICATION OF PROPER EROSION CONTROL MEASURE INSTALLATION IN ACCORDANCE WITH THE EROSION CONTROL DETAILS OR AS SPECIFIED HEREIN.
   - DETERMINE WHETHER EACH EROSION CONTROL MEASURE IS OPERATING PROPERLY. IF NOT, IDENTIFY DAMAGE TO THE CONTROL DEVICE AND DETERMINE REMEDIAL MEASURES.
   - IDENTIFY AREAS THAT APPEAR VULNERABLE TO EROSION AND DETERMINE ADDITIONAL EROSION CONTROL MEASURES THAT SHOULD BE USED TO IMPROVE CONDITIONS.
   - DETERMINE THE NEED TO SWEEP ADJACENT STREETS OR APPLY WATER FOR DUST CONTROL.

   ACCUMULATED SILT/SEDIMENT SHOULD BE REMOVED WHEN THE DEPTH OF SEDIMENT REACHES 50 PERCENT OF THE BARRIER HEIGHT. ACCUMULATED SILT/SEDIMENT SHOULD BE REMOVED FROM BEHIND SILT FENCING WHEN THE DEPTH OF THE SEDIMENT REACHES 6 INCHES.
2. IF INSPECTION OF THE SITE INDICATES A CHANGE SHOULD BE MADE TO THE EROSION CONTROL PLAN, EITHER TO IMPROVE EFFECTIVENESS OR CORRECT A SITE-SPECIFIC DEFICIENCY, THE INSPECTOR SHALL IMMEDIATELY IMPLEMENT THE CORRECTIVE MEASURE AND NOTIFY THE OWNER OF THE CHANGE.
3. THE CONTRACTOR SHALL KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN.

   THE LOG MUST BE MADE ACCESSIBLE TO THE OWNER AND REGULATORY STAFF, AND A COPY MUST BE PROVIDED UPON REQUEST.
4. ONCE THE SITE HAS BEEN PERMANENTLY STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHOULD BE REMOVED.

PRELIMINARY - NOT FOR CONSTRUCTION

CONSTRUCTION MANAGEMENT NOTES:

1. ALL CONSTRUCTION SHALL COMPLY WITH 2009 NFPA 1 CHAPTER 16 SAFE GUARDS DURING BUILDING CONSTRUCTION, ALTERATION AND DEMOLITION OPERATIONS.
2. ANY CUTTING AND WELDING WORK PERFORMED ONSITE SHALL REQUIRE A "HOT WORK" PERMIT FROM THE PORTLAND FIRE DEPARTMENT.
3. THE GENERAL CONTRACTOR SHALL POST EMERGENCY CONTACT INFORMATION ON THE PROJECT SITE PROPERTY DURING CONSTRUCTION IN THE EVENT OF AN AFTER HOURS EMERGENCY. THIS CONTACT INFORMATION SHALL ALSO BE PROVIDED TO THE PORTLAND FIRE DEPARTMENT.
4. IF THE SITE IS SECURED BY TEMPORARY OR PERMANENT FENCING WITH LOCKED GATES, THEN THE APPLICANT OR ASSIGNED REPRESENTATIVE SHALL PURCHASE A KNOX PADLOCK FROM THE PORTLAND FIRE DEPARTMENT TO ALLOW ACCESS BY THE PORTLAND FIRE DEPARTMENT.
5. STREETS SHALL MAINTAIN A 20' WIDTH FOR FIRE DEPARTMENT ACCESS AT ALL TIMES.
6. FIRE HYDRANTS SHALL NOT BE BLOCKED OR ENCLOSED BY FENCING. A 3' CLEARANCE SHALL BE MAINTAINED AT ALL TIMES AROUND FIRE HYDRANTS.

ZONING SUMMARY TABLE:

B-6 Urban Commercial Business Zone and Eastern Waterfront Mixed Zone Dimensional Requirements

Description	B-6 Requirement	100 FORE STREET LLC
Minimum Lot Size	None	129,212 s.f.
Minimum Frontage	None	737.67'
Minimum Front Yard	None	0'
Minimum Side Yard	None	>10'
Minimum Rear Yard	None	>10'
Maximum Front Yard	10 Feet	Meets overlay standard
Maximum Lot Coverage	100%	< 90%
Maximum Building Height	SEE CITY COUNCIL ORDER 68-18/19	Designed to meet recently enacted height allowances
Parking Retail Use	1 space per 200 s.f. of first floor area in excess of 2,000 s.f. not used for bulk storage	Retail 3,808 s.f. less 2,000 s.f. = 1,808/200 = 9 spaces
Parking Office Use	1 space per 400 s.f.	83,041 s.f./400 = 208 spaces
Total Spaces	217 spaces	555 spaces (338 spaces more than code - see parking analysis by Traffic Solutions)

GEOTECHNICAL

1. SEE FINDINGS AND RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT - BY SUMMIT GEOENGINEERING SERVICES, DATED 09/17/18. PROJECT # 16063. THIS REPORT SHALL BE MADE PART OF THE CONSTRUCTION DOCUMENTS IN ITS ENTIRETY.
2. ALL FILL WITHIN THE BUILDING FOOTPRINT SHALL BE STRUCTURAL FILL OR ¾" CRUSHED STONE OVERLYING A NON-WOVEN GEOTEXTILE. ALL FILL OUTSIDE OF THE BUILDING FOOTPRINT CAN BE STRUCTURAL FILL OR GRAVEL BORROW (MDOT 703.19), AS APPROVED BY THE GEOTECHNICAL ENGINEER.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVALS OF UNSUITABLE SOILS AND ALL ABANDONED SUBSURFACE CONDITIONS INCLUDING FOUNDATIONS, PIPE, AND RELATED INFRASTRUCTURE ASSOCIATED WITH THE HISTORICAL SITE USE. NO EXTRA PAYMENT WILL BE MADE FOR REMOVALS AND REPLACEMENT WITH STRUCTURAL FILL OR GRAVEL BORROW.

LEGEND:

PROPOSED		EXISTING	
	BUILDING		IRON PIN FOUND (IPF) OR CAPPED IRON ROD FOUND (CIR)
	BUILDING (FLOORS ABOVE GROUND ENTRANCE)	E	ELECTRIC MANHOLE
	EDGE OF PAVEMENT		CATCH BASIN
	VERTICAL GRANITE CURB		SEWER MANHOLE
	BRICK SIDEWALK	D	DRAIN MANHOLE
	BRICK SIDEWALK	WSO	DOWN SPOUT
SMH1	SEWER MANHOLE		WATER VALVE
DMH1	DRAIN MANHOLE		WATER SHUTOFF
CB1 CB1	CATCH BASIN		UTILITY POLE
12"SD	STORM DRAIN		SIGN
6" G	GAS LINE		LIGHT POLE
12"SAN	SEWER LINE		ELECTRIC METER
8"W	WATER LINE		GAS METER
OHE/T/C	AERIAL POWER - TEL - CABLE		EDGE OF PAVEMENT
UGE/T/C	POWER - TEL - CABLE LINES		CURB (GRANITE, UNLESS NOTED)
	UTILITY POLE		EDGE OF GRAVEL
	CONIFER		TREE
			STUMP
		70	EXISTING CONTOUR
		x=48.3	SPOT GRADE
			PROPERTY LINE
			RIGHT OF WAY
		SD	STORM DRAIN
		S	SEWER
		W	UNDERGROUND WATER
		OHP	OVERHEAD UTILITY WIRES
			WOOD STOCKADE FENCE
		X	CHAIN LINK FENCE
	DECIDUOUS		GUARD RAIL
			EXISTING BUILDING
	SHRUB		

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Consultants
ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
ALA
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

OWNER:
100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

Revision	By	Appd.	YY.MM.DD
7 FINAL PLAN SUBMISSION TO CITY	SRB	PBF	18.12.17
6 LEVEL III RE-SUBMISSION TO CITY	SRB	PBF	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	PBF	18.11.14
4 LEVEL III RE-SUBMISSION TO CITY	SRB	PBF	18.11.09
3 LEVEL III SUBMISSION TO CITY	SRB	PBF	18.10.09
2 PROGRESS SET	SRB	PBF	18.09.24
1 INTERNAL REVIEW	SRB	PBF	18.09.14

File Name: 195350450_gen | PBF DWN. | DBS CHKD. | SRB DSGN. | 18.09.14 DATE
P.E. STEPHEN R. BUSHEY

Permit-Seal

STATE OF MAINE
STEPHEN R. BUSHEY
12-17-18
LICENSED
PROFESSIONAL ENGINEER

Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
GENERAL NOTES & LEGEND

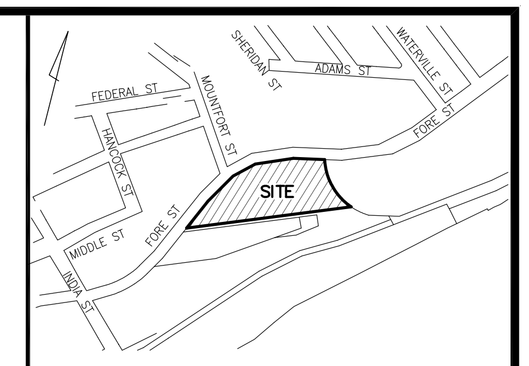
Project No. 210801622
Scale N.T.S.

Sheet
C-1.1

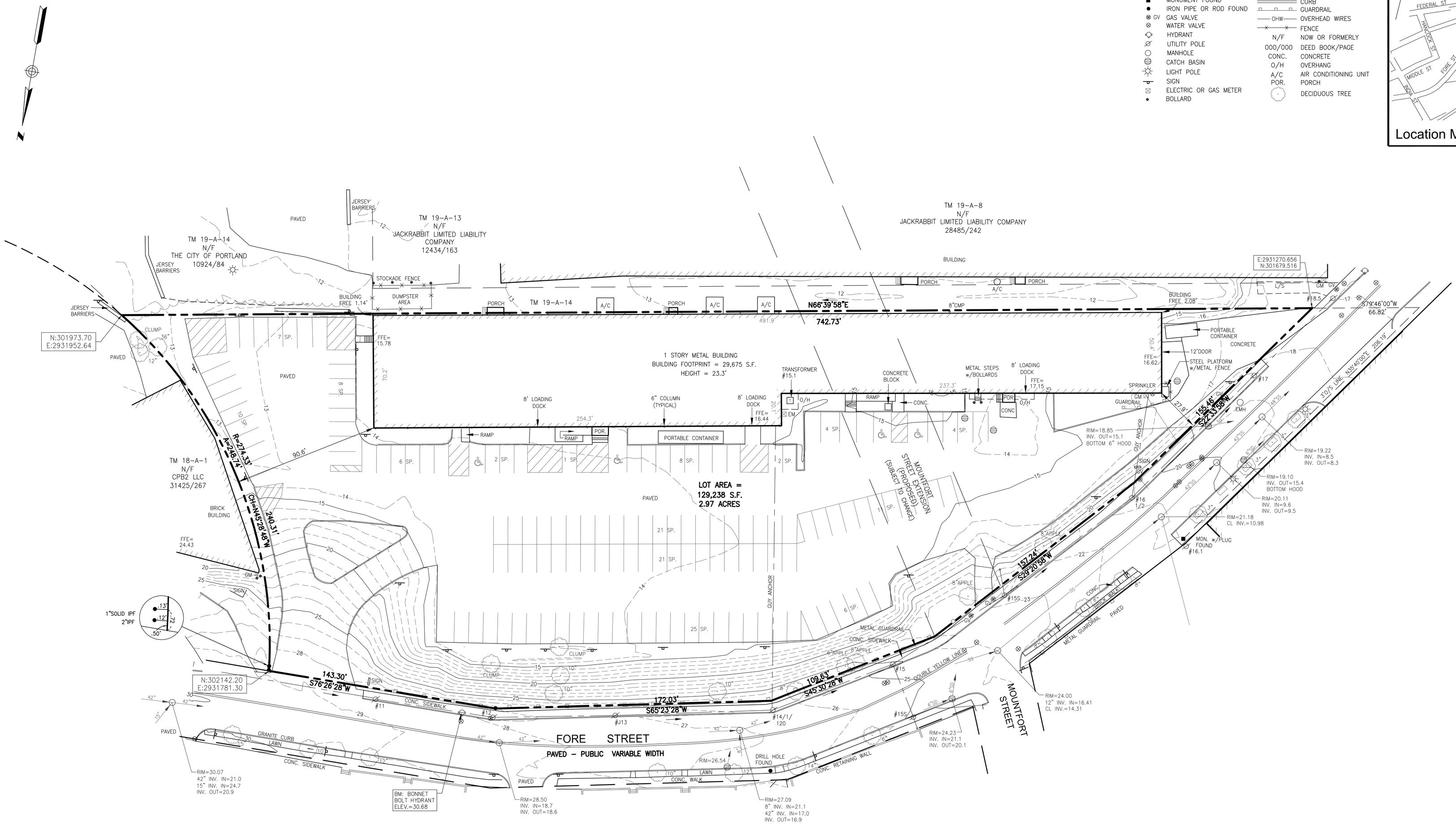
V:\2108\active\210801622\civil\cad\permit\dwg\01622_gen.dwg pfillietaz 12/18/2018 10:49 AM

Legend

- MONUMENT FOUND
- IRON PIPE OR ROD FOUND
- GV GAS VALVE
- WATER VALVE
- HYDRANT
- UTILITY POLE
- MANHOLE
- CATCH BASIN
- LIGHT POLE
- SIGN
- ELECTRIC OR GAS METER
- BOLLARD
- CURB
- GUARDRAIL
- OHW OVERHEAD WIRES
- FENCE
- N/F NOW OR FORMERLY
- 000/000 DEED BOOK/PAGE
- CONC. CONCRETE
- O/H OVERHANG
- A/C AIR CONDITIONING UNIT
- POR. PORCH
- DECIDUOUS TREE



Location Map N.T.S.



SCALE : 1" = 30'

0' 15' 30' 60'

Utility Note:

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION.

Plan References:

1. "ALTA/ACSM LAND TITLE SURVEY, 58 FORE STREET, PORTLAND, CUMBERLAND COUNTY, MAINE MADE FOR CPB2 LLC" MAY 22, 2013 BY OWEN HASKELL, INC.

2. "PLAN OF LAND IN PORTLAND, MAINE FOR CROSBY GROUP" AUGUST 6, 1976 BY OWEN HASKELL, INC.

3. "ALTA/ACSM LAND TITLE SURVEY, 100 FORE STREET, PORTLAND, CUMBERLAND COUNTY, MAINE MADE FOR NAI THE DUNHAM GROUP" SEPTEMBER 2, 2015 BY OWEN HASKELL, INC.

4. "ALTA/NSPS LAND TITLE SURVEY, 100 FORE STREET, PORTLAND, CUMBERLAND COUNTY, MAINE MADE FOR JONATHAN COHEN" OCTOBER 20, 2016 BY OWEN HASKELL, INC.

Notes:

1. OWNER OF RECORD: 100 FORE STREET LLC, P.O. BOX 910, WESTBROOK, MAINE, CUMBERLAND COUNTY REGISTRY OF DEEDS BOOK 33748, PAGE 1.

2. PROPERTY IS SHOWN AS LOT 10 BLOCK A ON CITY OF PORTLAND'S ASSESSORS MAP 19.

3. UTILITY SHOWN ARE OBSERVED EVIDENCE ONLY.

4. THERE ARE 136 REGULAR PARKING SPACES AND 4 HANDICAP SPACES.

5. BEARINGS AND COORDINATES ARE BASED ON ON CITY OF PORTLAND CONTROL, STATE PLANE MAINE WEST, NAD83. CITY POINTS UTILIZED – 3000 N:301536.12 E:2931222.72 & 3023 N:301390.32 E:2931443.86 OCEAN GATEWAY PROJECT. VERTICAL BENCHMARK: 3" O/S MONUMENT CORNER OF HANCOCK STREET AND THAMES STREET ELEVATION 13.98' CITY DATUM.

STATE OF MAINE
RANDY R. LOUBIER 2407
PROFESSIONAL LAND SURVEYOR

REV. 3	12/17/18	REVISED SOUTHERLY & EASTERLY PROPERTY LINES
REV. 2	9/06/18	ADDITIONAL TOPOGRAPHY
REV. 1	8/24/18	ADDED PROPOSED MOUNTFORT STREET EXTENSION

Topographic Survey

100 Fore Street
100 Fore Street, Portland, Maine
made for
Jonathan Cohen
P.O. Box 910, 865 Spring Street
Westbrook, Maine 04092

OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 U.S. ROUTE ONE, UNIT 10, FALMOUTH, MAINE 04105

DRAWN BY:	RS / JLW	DATE:	DEC. 4, 2017	JOB NO.	2016-325 P
CHECKED BY:	EBC / RRL	SCALE:	1" = 30'	DRWG. NO.	1

GEOTECHNICAL LEGEND

- B-1 — SUMMIT TEST BORING (NOV. 2-3, 2017)
- CPT-1 — SUMMIT CONE PENETRATION TEST AND LEDGE PROBE (NOV. 2, 2017)

ALL CONDITIONS SHOWN ON THIS PLAN ARE PER DESIGN AND CONSTRUCTION DURING THE SUMMER/FALL 2018. ANTICIPATED COMPLETION DEC. 2018)

ALL WORK WITHIN THE CITY OF PORTLAND PROPERTY SHALL BE BY OTHERS

COORDINATE RELOCATION OF EXISTING DUMPSTER ENCLOSURE WITH ABUTTING LAND OWNERS, AT NO EXTRA EXPENSE TO THE 100 FORE STREET LLC.

TM 19-A-2 N/F THE CITY OF PORTLAND 21951/341

TM 19-A-13 N/F JACKRABBIT LIMITED LIABILITY COMPANY 12434/163

TM 19-A-8 N/F JACKRABBIT LIMITED LIABILITY COMPANY 28485/242

TM 19-A-14 N/F 0 HANCOCK STREET LLC 34347/163

EXISTING EQUIPMENT TO BE REMOVED (TYP)

SAWCUT EXISTING CONCRETE
REMOVE EXISTING CONCRETE
PROTECT EXISTING CONCRETE AREA

APPROXIMATE LIMIT OF WORK

E:2931270.656 N:301679.516

E:2931952.355 N:301973.582

EXISTING BUILDING AND ALL APPURTENANCES TO BE REMOVED - ALL EXISTING FOUNDATION ELEMENTS SHOULD BE REMOVED IN THEIR ENTIRETY FROM WITHIN PROPOSED BUILDING FOOTPRINT. ALL VOIDS SHALL BE FILLED WITH STRUCTURAL FILL OR ¾" CRUSHED STONE

BUILDING AND ALL APPURTENANCES TO REMAIN & BE PROTECTED DURING CONSTRUCTION. EXACT LIMITS TO BE DETERMINED BY ARCHITECT (SEE ARCHITECTURAL PLANS FOR INTERIOR RENOVATIONS OF BUILDING TO REMAIN)

1 STORY METAL BUILDING
BUILDING FOOTPRINT = 29,675 S.F.
HEIGHT = 23.3'

REMOVE EXISTING PAVEMENT & CURB, TYP

TRANSFORMER #15.1 (COORDINATE REMOVAL WITH CMP)

APPROXIMATE LOCATION OF PWD WATER SERVICE CARD 8/3/76 4" DOM. 8" FIRE

CONTRACTOR TO CLEAN CATCH BASIN AND VERIFY DISCHARGE LOCATION (TYP)

EXISTING WATER SERVICES TO REMAIN (4" DOMESTIC & 8" FIRE)

EXISTING CMP MANHOLE TO BE REUSED - COORDINATE WITH CMP.

REMOVE EXISTING CATCH BASINS, ABANDON PIPES IN PLACE

EXISTING UGE TO BE DISCONTINUED

REMOVE & REPLACE PAVEMENT SURFACE (TYP)

SMH
RIM: 19.22
INV. IN: 8.5
INV. OUT: 8.3

SMH
RIM: 20.11
INV. IN: 9.6
INV. OUT: 9.5

EXISTING GAS SERVICE ENTRY PER UNITIL RECORDS. THE EXISTING BUILDING IS SERVICED BY A ¾" PLASTIC SERVICE THAT MAY REQUIRE REPLACEMENT. CONTRACTOR TO COORDINATE WITH UNITIL.

EXISTING CMP POLE TO BE REMOVED AND A NEW POLE RESET

SMH
RIM: 21.48
CL INV.: +10.98

6" NATURAL GAS MAIN TO BE PROTECTED

EXISTING OVERHEAD ELECTRIC LINES - ES BOULOS TO COORDINATE WITH ALL PROVIDERS FOR WIRES AND SERVICES ON FORE STREET

APPROXIMATE SAWCUT OR PAVEMENT GRIND LIMITS AS PART OF CURB AND SIDEWALK REMOVAL AND REPLACEMENT (TYP)

SMH
RIM: 24.00
12" INV. IN : 16.41
6 INV. OUT: 14.31

86 NEWBURY STREET (FUTURE DEVELOPMENT BY OTHERS - UNDER CONSTRUCTION FALL 2018)

58 FORE STREET SITE

TM 18-A-1 N/F CPB2 LLC 31425/267

LOT AREA = 129,212 S.F. 2.97 ACRES

REMOVE EXISTING PAVEMENT & CURB, TYP

BORING (SEE SUMMIT GEOTECHNICAL REPORT)

REMOVE EXISTING PAVEMENT & CURB, TYP. SALVAGE EXISTING GRAVEL WHERE POSSIBLE AND IF SUITABLE FOR REUSE

ALL WORK IN PUBLIC ROW REQUIRES A STREET OPENING PERMIT FROM THE CITY OF PORTLAND AND IS SUBJECT TO THE CITY'S RULES AND REGULATIONS FOR EXCAVATION ACTIVITY WITHIN THE PUBLIC RIGHT OF WAY - REVISED JUNE 2000.

REMOVE EXISTING TREES,TYP.

REMOVE EXISTING SIGNS,TYP.

TO BE REMOVED

APPROXIMATE LIMIT OF WORK (TYP)

E:2931781.307 N:302142.198

PROTECT EXISTING MONUMENTS, TYP. (PROTECT AS NECESSARY AND RESET IF DISTURBED, AT NO EXTRA EXPENSE TO THE OWNER)

REMOVE EXISTING SIGN

PROTECT EXISTING POWER POLES DURING CONSTRUCTION, TYP. COORDINATE PROTECTION WITH CMP

APPROXIMATE SAWCUT OR PAVEMENT GRIND LIMITS AS PART OF CURB AND SIDEWALK REMOVAL AND REPLACEMENT (TYP)

PROTECT FIRE HYDRANT

SMH
RIM: 28.50
INV. IN : 18.7
12" INV. OUT: 18.6

REMOVE GUARDRAIL, TYP

EXISTING CONCRETE SIDEWALK, CONCRETE TO BE REMOVED TO ALLOW FOR NEW FULL DEPTH BRICK CONSTRUCTION, TYP.

SMH
RIM: 27.09
8" INV. IN : 21.1
42" INV. IN: 17.0
42" INV. OUT: 16.9

REMOVE AND RESET GRANITE CURB FOR FOUNDATION AND SIDEWALK CONSTRUCTION AS NECESSARY, TYP. - ANY NEW CURB AS MAY BE REQUIRED BY THE CITY SHALL BE INCIDENTAL

PROTECT EXISTING AND/OR POWER POLES DURING CONSTRUCTION, TYP. COORDINATE PROTECTION WITH CMP

FORE STREET
PAVED – PUBLIC VARIABLE WIDTH

MOUNTFORT STREET

BM: BONNET BOLT HYDRANT PSI-101 ELEV.=30.68

PLAN REFERENCES:

1. "TOPOGRAPHIC SURVEY, 100 FORE STREET, PORTLAND, MAINE, MADE FOR JONATHAN COHEN, P.O. BOX 910, 865 SPRING STREET, WESTBROOK, MAINE 04092", BY OWEN HASKELL, INC., DATE: LAST REVISED 09/06/2018.
2. BUILDING PLANS BY ARCHETYPE, P.A.
3. "SITE DEVELOPMENT PLANS FOR A COMMERCIAL OFFICE BUILDING ON THAMES STREET PROPERTY (ONE HANCOCK STREET), PORTLAND, MAINE, NOVEMBER 2017, CONSTRUCTION SET", (WEX PROJECT), PREPARED BY STANTEC.
5. PORTLAND SEWER SYSTEM INFILTRATION - INFLOW ANALYSIS MAPPING BY HUNTER - BALLEW ASSOCIATES, 1981. SHEET N-3.
6. REFER TO GEOTECHNICAL REPORT BY SUMMIT GEOENGINEERING SERVICES PROJECT #16063, DATED 9/17/18.

NOTES

1. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL CLEAN ALL DRAINAGE AND WASTEWATER STRUCTURES AND PIPES TO REMAIN AND VERIFY ALL PIPE CONNECTIONS, ROUTING AND CONDITION BY VIDEO INSPECTION.
2. SEE CONSTRUCTION MANAGEMENT PLAN BY CIANBRO FOR DETAILS ON STAGING, MATERIALS STORAGE AND OVERALL SITE MANAGEMENT DURING CONSTRUCTION.
3. ALL EXISTING UTILITY LOCATIONS DEPICTED ON THIS PLAN SHALL BE CONSIDERED APPROXIMATE. THE INFORMATION IS BASED UPON AVAILABLE CITY/UTILITY PROVIDER RECORDS AND HAS NOT BEEN CONFIRMED IN THE FIELD. ALL INFORMATION INCLUDED, BUT NOT LIMIT TO, PIPE INVERTS, HORIZONTAL ALIGNMENT AND SIZES IS SUBJECT TO CONFIRMATION DURING THE COURSE OF CONSTRUCTION.
4. THE CONTRACTOR SHALL CONTACT DIG SAFE @ 811 OR 1-888-DIG-SAFE AND ALSO A PRIVATE UTILITY LOCATE COMPANY TO MARK ALL UTILITIES IN THE PUBLIC RIGHT OF WAYS AND ON PRIVATE PROPERTY.

NORTH

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

V:\210801622\civil\cad\permit\dwg\01622_base.dwg, pfillette, 12/18/2018 9:45 AM

Stantec

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482 Payne Road Scarborough Court
Scarborough, Maine 04074-8929
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Consultants
ARCHITECT: ARCHETYPE
LANDSCAPE ARCHITECT: ALA
SURVEYOR: OWEN HASKELL
CONTRACTOR: CIANBRO

Notes

OWNER OF RECORD:

100 FORE STREET LLC
P.O. BOX 910
WESTBROOK, ME 04098
CCRD BOOK 33748, PAGE 001

Revision	By	Appd.	YY.MM.DD
7 FINAL PLAN SUBMISSION TO CITY	SRB	DBS	18.12.17
6 LEVEL III RE-SUBMISSION TO CITY	SRB	DBS	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	DBS	18.11.14
4 LEVEL III RE-SUBMISSION TO CITY	SRB	DBS	18.11.09
3 LEVEL III SUBMISSION TO CITY	SRB	DBS	18.10.09
2 PROGRESS SET	SRB	DBS	18.09.24
1 INTERNAL REVIEW	SRB	DBS	18.09.14

File Name: 01622_base | PBF DWN. | DBS CHKD. | SRB DSGN. | 18.09.14 DATE
P.E. STEPHEN R. BUSHEY

Permit-Seal

STATE OF MAINE — STEPHEN R. BUSHEY — 12-05-18 — LICENSED PROFESSIONAL ENGINEER

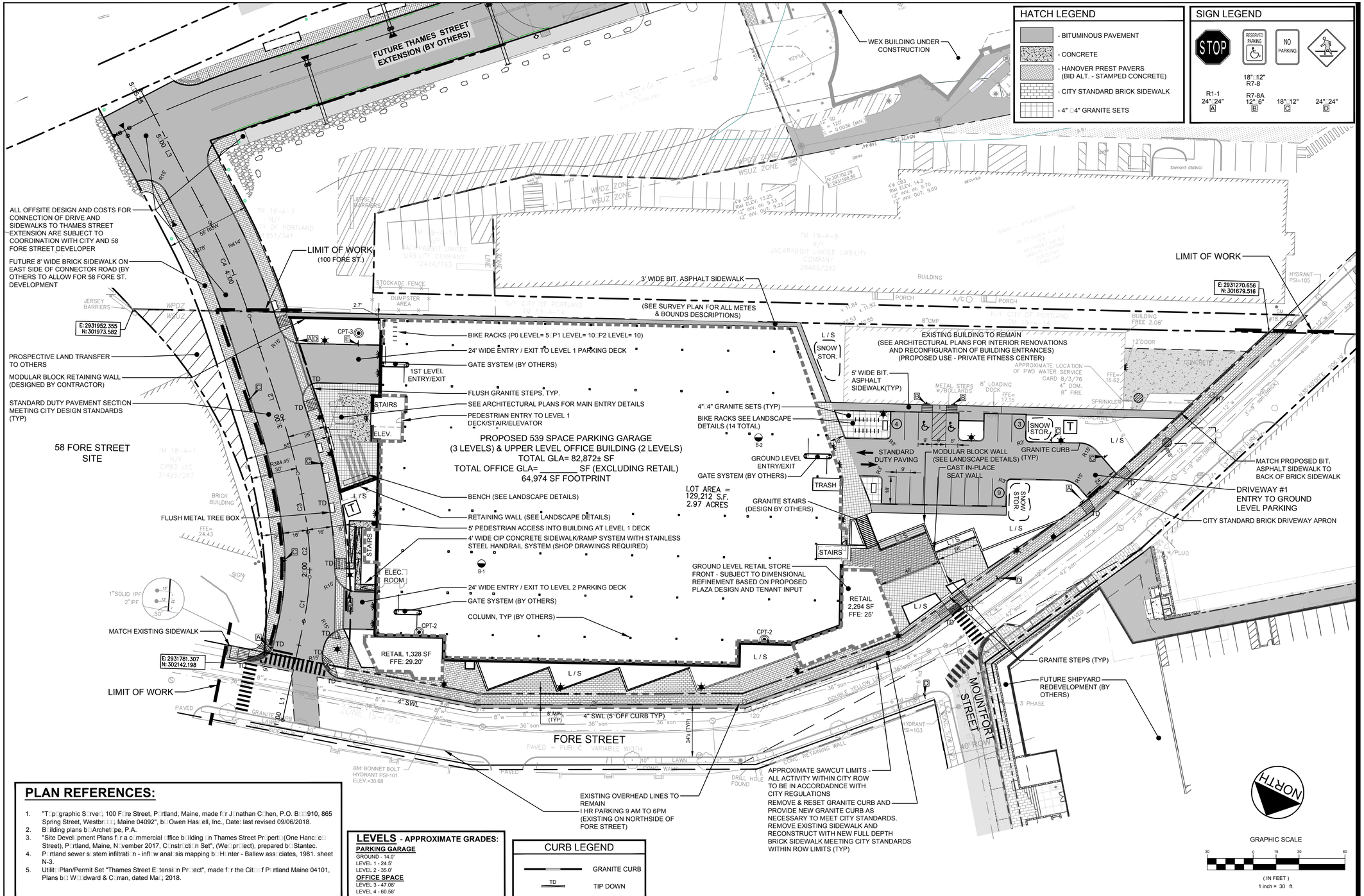
Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
EXISTING CONDITIONS & DEMOLITION PLAN

Project No. 210801622
Scale 1" = 30'

Sheet
C-2.1



PLAN REFERENCES:

1. "T□p□graphic S□rve□, 100 F□re Street, P□rtland, Maine, made f□r J□nathan C□hen, P.O. B□□910, 865 Spring Street, Westbr□□□, Maine 04092", b□ Owen Has□ell, Inc., Date: last revised 09/06/2018.
2. B□ilding plans b□ Archet□pe, P.A.
3. "Site Devel□pment Plans f□r a c□mmercial □ffice b□ilding □n Thames Street Pr□pert□ (One Hanc□c□ Street), P□rtland, Maine, N□vember 2017, C□nstr□cti□n Set", (We□pr□ject), prepared b□ Stantec.
4. P□rtland sewer s□stem infiltrati□n - infl□w anal□sis mapping b□ H□nter - Ballew ass□ciates, 1981. sheet N-3.
5. Utilit□ Plan/Permit Set "Thames Street E□tensi□n Pr□ject", made f□r the Cit□□f P□rtland Maine 04101, Plans b□ W□dward & C□rran, dated Ma□, 2018.

LEVELS - APPROXIMATE GRADES:

PARKING GARAGE
GROUND - 14.0'
LEVEL 1 - 24.5'
LEVEL 2 - 35.0'
OFFICE SPACE
LEVEL 3 - 47.08'
LEVEL 4 - 60.58'

CURB LEGEND
GRANITE CURB
TD TIP DOWN

DIMENSIONAL REQUIREMENTS FOR THE B-6 EASTERN WATERFRONT BUSINESS ZONE

ITEM DESCRIPTION	LAND USE ORDINANCE REQUIREMENT	PROPOSED
MIN. LOT SIZE	NONE	2.97 ACRES
MIN. FRONTAGE	NONE	737.67 FEET
MIN. FRONT SETBACK	NONE (BUILD TO KEY BLDG. ENVELOPES SHOWN ON B6 BLDG. HEIGHT OVERLAY & BLDG. ENVELOPES MAP)	6 INCHES ±
MIN. SIDE SETBACK	NONE	71 FEET
MIN. REAR SETBACK	NONE	10.67 FEET
MAX. BUILDING SETBACK FROM STREET LINE	10 FEET (BUILD TO KEY BLDG. ENVELOPES SHOWN ON B6 BLDG. HEIGHT OVERLAY & BLDG. ENVELOPES MAP)	6 INCHES ±
MIN. LENGTH OF BLDG. WALL REQUIRED TO BE LOCATED ALONG STREET FRONTAGE OF LOT	70□ OF LOT STREET FRONTAGE OR 25□ OF BUILDING PERIMETER	30□ OF BUILDING PERIMETER
MAX. LOT COVERAGE	100□	80% ±
MAX. BLDG. HEIGHT	SEE CITY COUNCIL ORDER 68-18/19	SEE ARCHITECTURAL PLANS FOR DETAILS

CURVE TABLE: ALIGNMENTS

ID	RADIUS	ARC LENGTH	DELTA	TANGENT	PC STATION	PT STATION
C1	175.00	58.68	019° 13'	29.62	1□65.97	2□24.65
C2	175.00	58.68	019° 13'	29.62	1□65.97	2□24.65
C3	400.45	77.83	011° 08'	39.04	2□24.65	3□02.48
C4	400.00	66.48	009° 31'	33.32	3□71.24	4□37.72

LINE TABLE: ALIGNMENTS

ID	LENGTH	DIRECTION
L1	65.97	S12° 22' 47.51"E
L2	68.76	S42° 34' 00.69"E
L3	97.53	S52° 05' 24.08"E

PRELIMINARY - NOT FOR CONSTRUCTION

Stantec
482 Payne Road Scarborough Court
Scarborough, Maine 04074-8929
Tel. 207.883.3355
www.stantec.com

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Consultants
ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
ALA
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

OWNER:
100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

Revision	By	Appd.	YY.MM.DD
8 ISSUED LOI #2	SRB	DBS	19.01.04
7 FINAL PLAN SUBMISSION TO CITY	SRB	DBS	18.12.17
6 LEVEL III RE-SUBMISSION TO CITY	SRB	DBS	18.11.30
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1 INTERNAL REVIEW	SRB	DBS	18.09.14

File Name: 195350450_SP	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal
STATE OF MAINE
STEPHEN R. BUSHEY
21-08-15
LICENSED PROFESSIONAL ENGINEER

Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
SITE LAYOUT PLAN

Project No. 210801622
Scale 1" = 30'

Sheet
C-3.0

V:\2108\active\210801622\civil\cad\permit\dwg\01622_sp.dwg b□ rsasa 1/4/2019 3:39 PM

WEX BUILDING UNDER CONSTRUCTION

60" CONC. PIPE

CITY DMH 3

CB 4

CB 3

LIMIT OF WORK
(100 FORE ST.)
CB 2
RIM: 19.62'
INV. OUT 12.0'

TEMPORARY GRADING SLOPE WITH CITY LAND (LEASE REQUIRED)

CITY DMH 4

E: 2931952.355
N: 301973.582

CB 1
RIM: 19.30'
INV. OUT 12.0'

4' Ø SITE DMH 1 W/ BACKFLOW PREVENTER
RIM= 14.5'±
INV. IN: 10.43
INV. OUT: 10.33

58 FORE STREET
SITE

SEE ENLARGEMENT PLAN C-3.4
FOR ENTRANCE GRADING

TEMPORARY SLOPE
(COORDINATE WITH 58 FORE
STREET DEVELOPER)

CITY DMH 5

SEE ENLARGEMENT PLAN
C-3.3 FOR RAMP GRADING

1"SOLID IPF
2"IPF

E: 2931781.307
N: 302142.198

LIMIT OF WORK

TEMPORARY STABILIZED
ENTRANCE DURING
CONSTRUCTION (TYP)

CITY DMH 7

BM: BONNET BOLT
HYDRANT PSI-101
ELEV.=30.68

SILT FENCE

1ST LEVEL
ENTRY/EXIT
ELEV.: 24.5

12" SD FROM
GARAGE
S=TBD

SITE DMH 2
RIM: 14.0
INV. IN: TBD
INV. OUT: TBD

12" SD FROM
ROOF DRAINS
S=0.005

CITY STANDARD
GREASE TRAP FOR
OIL/WATER
SEPARATION

SITE DMH 3
RIM14.0
INV. IN: TBD
INV. OUT: TBD

PROPOSED 5' CATCH BASIN WITH
FABCO STORM BASIN WATER QUALITY
2 CARTRIDGE FILTER INSERT (SEE
DETAIL SHEET C-6.6)
FRAME/GRATE - EAST JORDAN VS667
(2'x4' SIZE)
RIM: 13.8
12" INV. OUT : TBD

DOWN SPOUT ROOF
DRAIN FILTER (TYP)

PROPOSED PARKING GARAGE (3 LEVELS) &
UPPER LEVEL OFFICE BUILDING (2 LEVELS)
64,974 SF FOOTPRINT (EXCLUDING RETAIL)

GROUND LEVEL: 14.0'±
1ST LEVEL = 24.5'±
2ND LEVEL = 35.0'±

LOT AREA =
129,212 S.F.
2.97 ACRES

GROUND LEVEL
ENTRY/EXIT
ELEV.: 14.0

31.5 (L) LANDING
(COORDINATE WITH
ARCHITECTURAL
PLANS)

ELEC.
ROOM

2ND LEVEL
ENTRY/EXIT
ELEV.: 35.0

RETAIL
FFE: 29.20'±

GRADING ALONG FORE STREET SEE
ENLARGEMENT PLAN C-3.2

FORE STREET
PAVED – PUBLIC VARIABLE WIDTH

EXISTING DRIVEWAY TO
REMAIN FOR SERVICE
ACCESS ONLY

LIMIT OF WORK

E: 2931270.656
N: 301679.516

EXISTING BUILDING
TO REMAIN
FFE: 17.15

APPROXIMATE LOCATION
OF PWD WATER SERVICE
CARD 8/3/76
4" DOM.
8" FIRE

METAL STEPS
w/BOLLARDS

8' LOADING
DOCK
FFE= 17.15

SPRINKLER

BUILDING
FREE 2.08'

12'DOOR

CONCRETE

SNOW STOR.

TRASH

RETAIL
FFE: 25.0'±

STAIRS

PROVIDE TEMPORARY INLET
PROTECTION DURING
CONSTRUCTION SILT SACK OR
EQUAL(TYP)

MAINTAIN FORE ST. FREE AND
CLEAR OF MUD AND DEBRIS AT
ALL TIMES.

TEMPORARY STABILIZED ENTRANCE
DURING CONSTRUCTION (TYP)

GRADING IN PLAZA AREA SEE
ENLARGEMENT PLAN C-3.1

MOUNTFORT
STREET
40' ROW

HYDRANT
PSI=103

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

NORTH

LEVELS - APPROXIMATE GRADES:

PARKING GARAGE
GROUND - 14.0'
LEVEL 1 - 24.5'
LEVEL 2 - 35.0'

OFFICE SPACE
LEVEL 3 - 47.08'
LEVEL 4 - 60.58'

CURB LEGEND

GRANITE CURB

TD TIP DOWN

PLAN REFERENCES:

1. "T□p□graphic S□rve□, 100 F□re Street, P□rtland, Maine, made f□r J□nathan C□hen, P.O. B□□910, 865 Spring Street, Westbr□□□, Maine 04092", b□ Owen Has□ell, Inc., Date: last revised 09/06/2018.
2. B□ilding plans b□ Archet□pe, P.A.
3. "Site Devel□pment Plans f□r a c□mmercial □ffice b□ilding □n Thames Street Pr□pert□ (One Hanc□c□ Street), P□rtland, Maine, N□vember 2017, C□nstr□cti□n Set", (We□ pr□□ect), prepared b□ Stantec.
4. P□rtland sewer s□stem infiltrati□n - infl□w anal□sis mapping b□ H□nter - Ballew ass□ciates, 1981. sheet N-3.
5. Utilit□ Plan/Permit Set "Thames Street E□tensi□n Pr□ect", made f□r the Cit□ □f P□rtland Maine 04101, Plans b□ G□rrill Palmer, dated Ma□, 2018.

PRELIMINARY - NOT FOR CONSTRUCTION

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OWEN HASKELL

CONTRACTOR
CIANBRO

Notes

Revision	By	Appd.	YY.MM.DD
8 ISSUED LOR #2	SRB	DBS	19.01.04
7 FINAL PLAN SUBMISSION TO CITY	SRB	DBS	18.12.17
6 LEVEL III RESUBMISSION TO CITY	SRB	DBS	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	DBS	18.11.14
4 LEVEL III SUBMISSION TO CITY	SRB	DBS	18.11.09
3 LEVEL III RESUBMISSION TO CITY	SRB	DBS	18.10.09
2 PROGRESS SET	SRB	DBS	18.09.24
1 INTERNAL REVIEW	SRB	DBS	18.09.14

File Name: 195350450_SP	P&F	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal

STATE OF MAINE
STEPHEN R. BUSHEY
01-04-19
LICENSED
PROFESSIONAL ENGINEER

Client/Project

100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

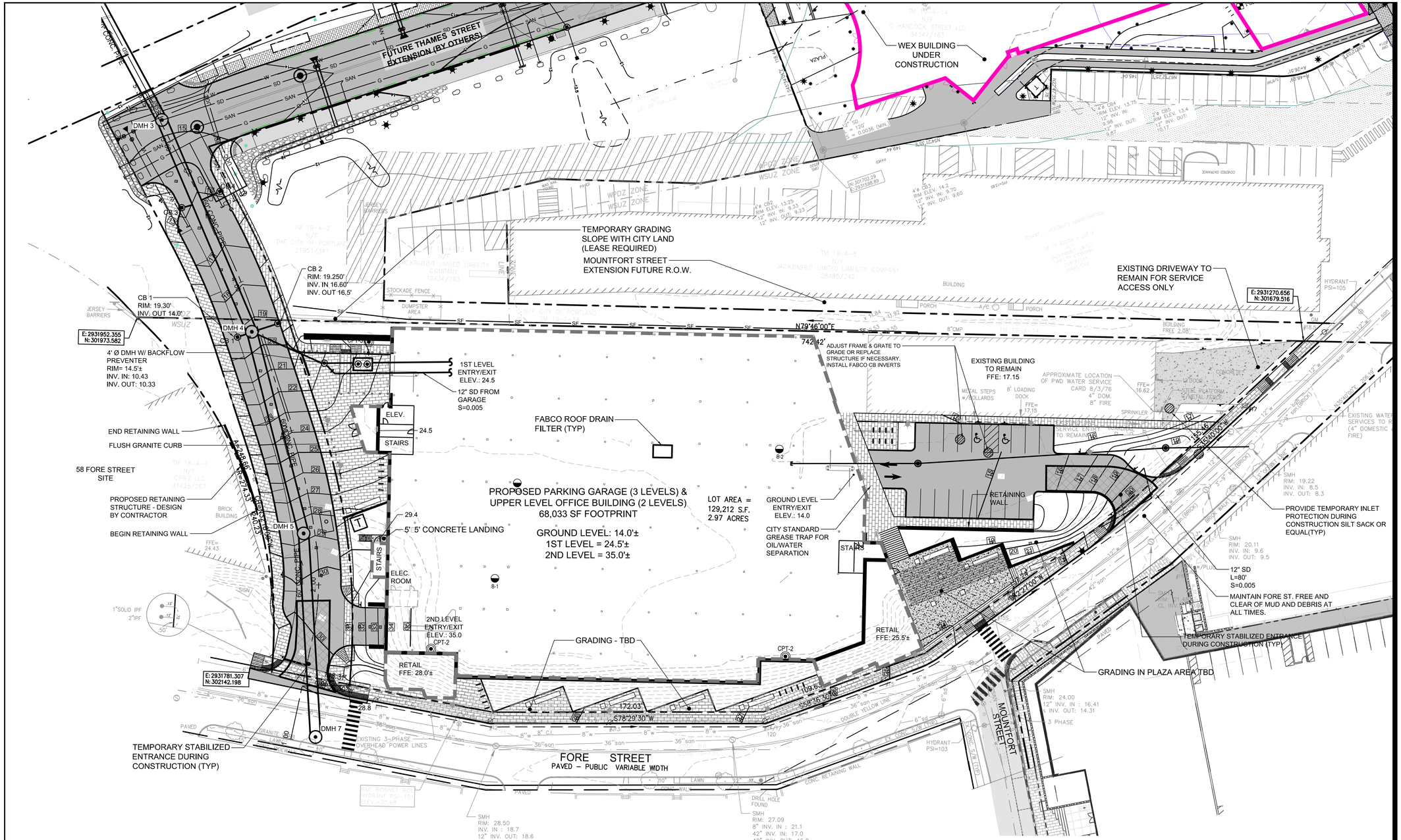
Title

GRADING, DRAINAGE AND EROSION CONTROL PLAN

Project No.	Scale
210801622	N.T.S.

Sheet

C-4.0



LEVELS - APPROXIMATE GRADES:

PARKING GARAGE
GROUND - 14.0'
LEVEL 1 - 24.5'
LEVEL 2 - 35.0'

OFFICE SPACE
LEVEL 3 - 46.08'
LEVEL 4 - 59.5'

CURB LEGEND

═══	GRANITE CURB
TD ═══	TIP DOWN

PLAN REFERENCES:

1. "T□p□graphic S□rve□, 100 F□re Street, P□rtland, Maine, made f□r J□nathan C□hen, P.O. B□□910, 865 Spring Street, Westbr□□□, Maine 04092", b□ Owen Has□ell, Inc., Date: last revised 09/06/2018.
2. B□ilding plans b□ Archet□pe, P.A.
3. "Site Devel□pment Plans f□r a c□mmercial □ffice b□ilding □n Thames Street Pr□pert□ (One Hanc□c□ Street), P□rtland, Maine, N□vember 2017, C□nstr□cti□n Set", (We□pr□ject), prepared b□ Stantec.
4. P□rtland sewer s□stem infiltrati□n - infl□w anal□sis mapping b□ H□nter - Ballew ass□ciates, 1981. sheet N-3.
5. Utilit□ Plan/Permit Set "Thames Street E□tensi□n Pr□ect", made f□r the Cit□□f P□rtland Maine 04101, Plans b□ G□rrill Palmer, dated Ma□, 2018.

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

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Revision	By	Appd.	YY.MM.DD
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4 LEVEL III RE-SUBMISSION TO CITY	SRB	SRB	18.11.09
3 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2 PROGRESS SET	SRB	SRB	18.09.24
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 195350450_SP	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal

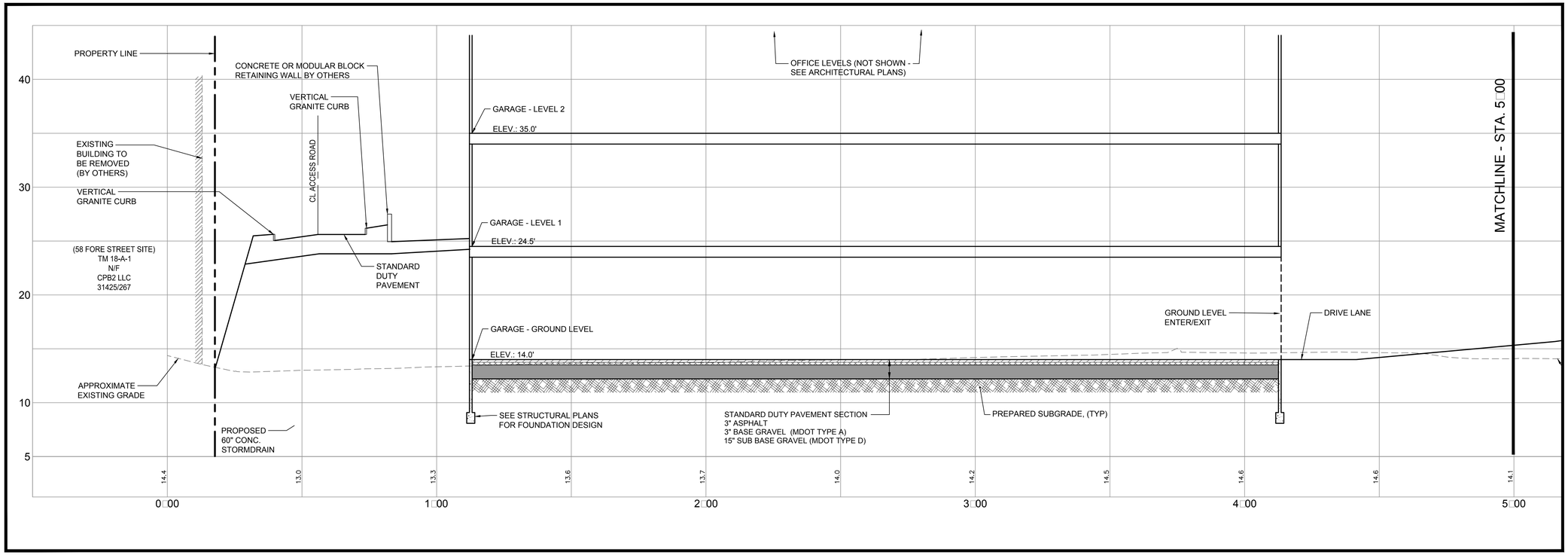
Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
GRADING, DRAINAGE AND EROSION CONTROL PLAN

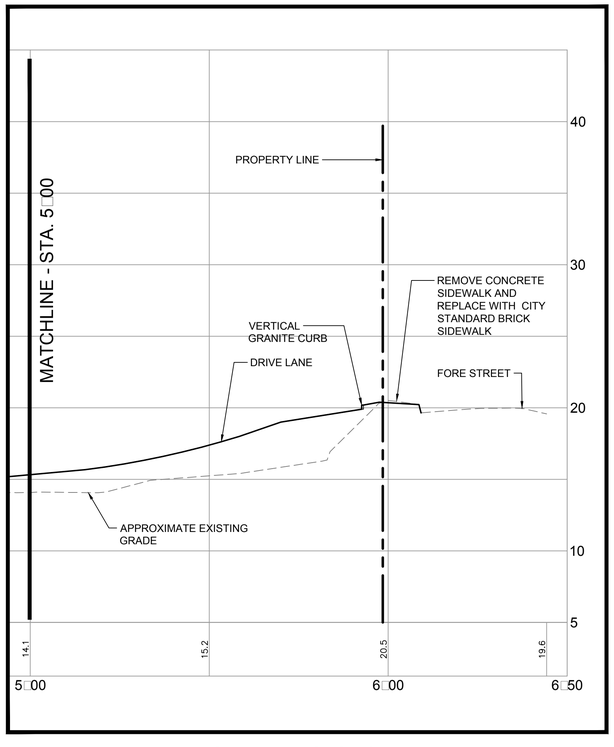
Project No. 210801622
Scale N.T.S.

Sheet
C-4.0



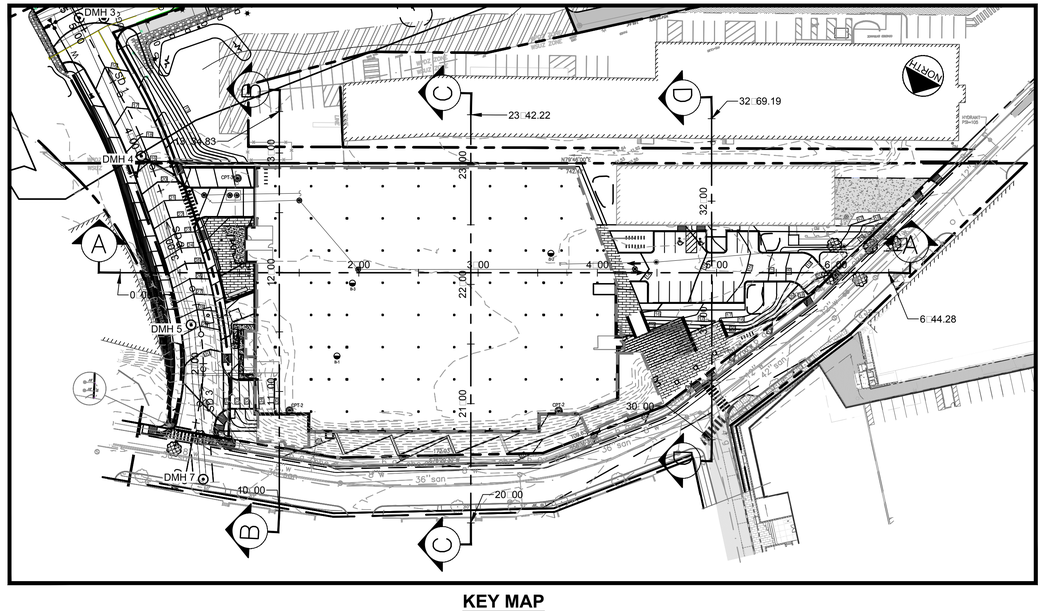
SITE PLAN SECTION A-A

HZ: 1" = 20'
VT: 1" = 5'



SITE PLAN SECTION A-A

HZ: 1" = 20'
VT: 1" = 5'



KEY MAP

HZ: 1" = 60'

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No.	Revision	By	Appd.	YY.MM.DD
7	FINAL PLAN SUBMISSION TO CITY	SRB	SRB	18.12.17
6	LEVEL III RECSUBMISSION TO CITY	SRB	SRB	18.11.30
5	PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4	LEVEL III RECSUBMISSION TO CITY	SRB	SRB	18.11.09
3	LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2	PROGRESS SET	SRB	SRB	18.09.24
1	INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 01622_sections	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHK'D.	DSGN.	DATE

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12-05-18
LICENSED PROFESSIONAL ENGINEER

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WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
SITE CROSS SECTIONS - SHEET 1 OF 3

Project No.
210801622

Scale
AS NOTED

Sheet
C-4.1

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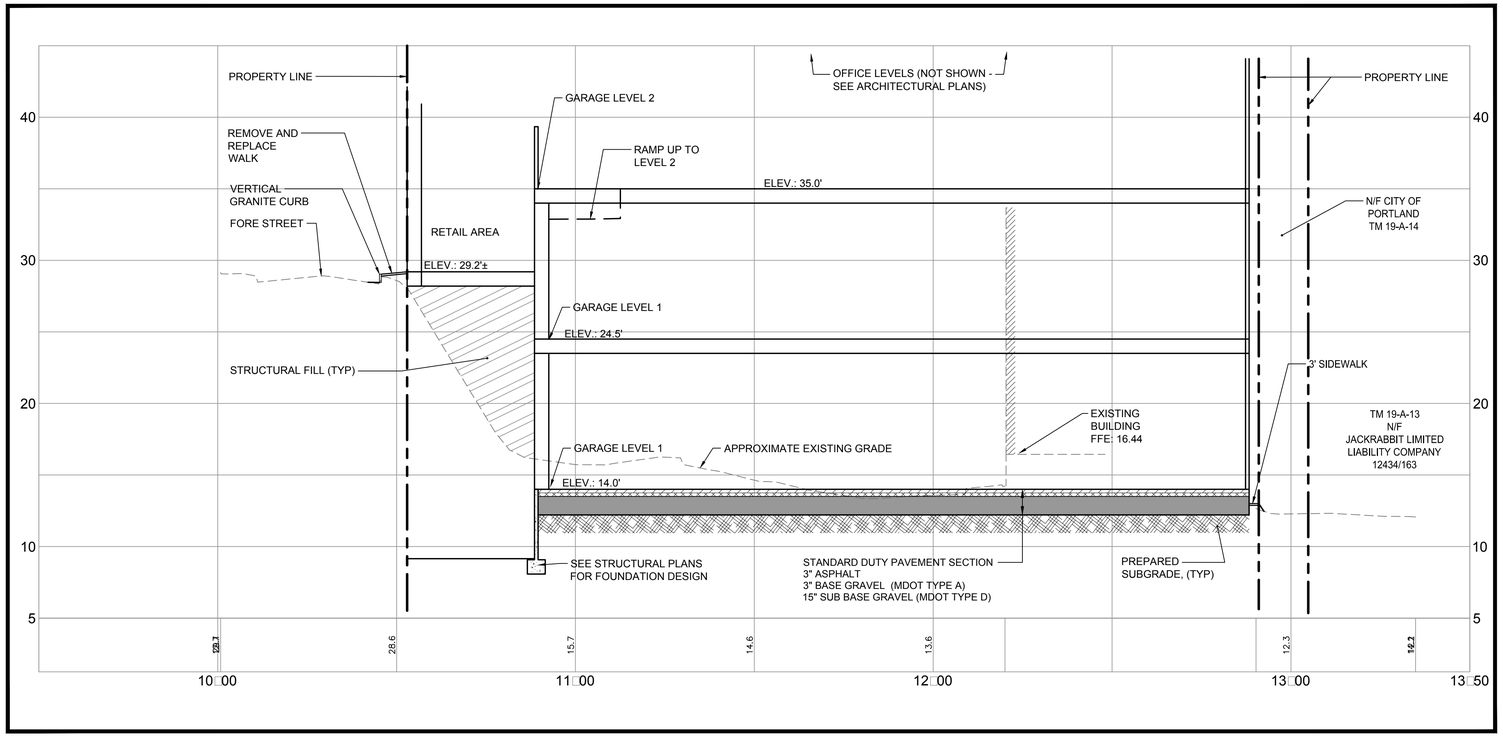
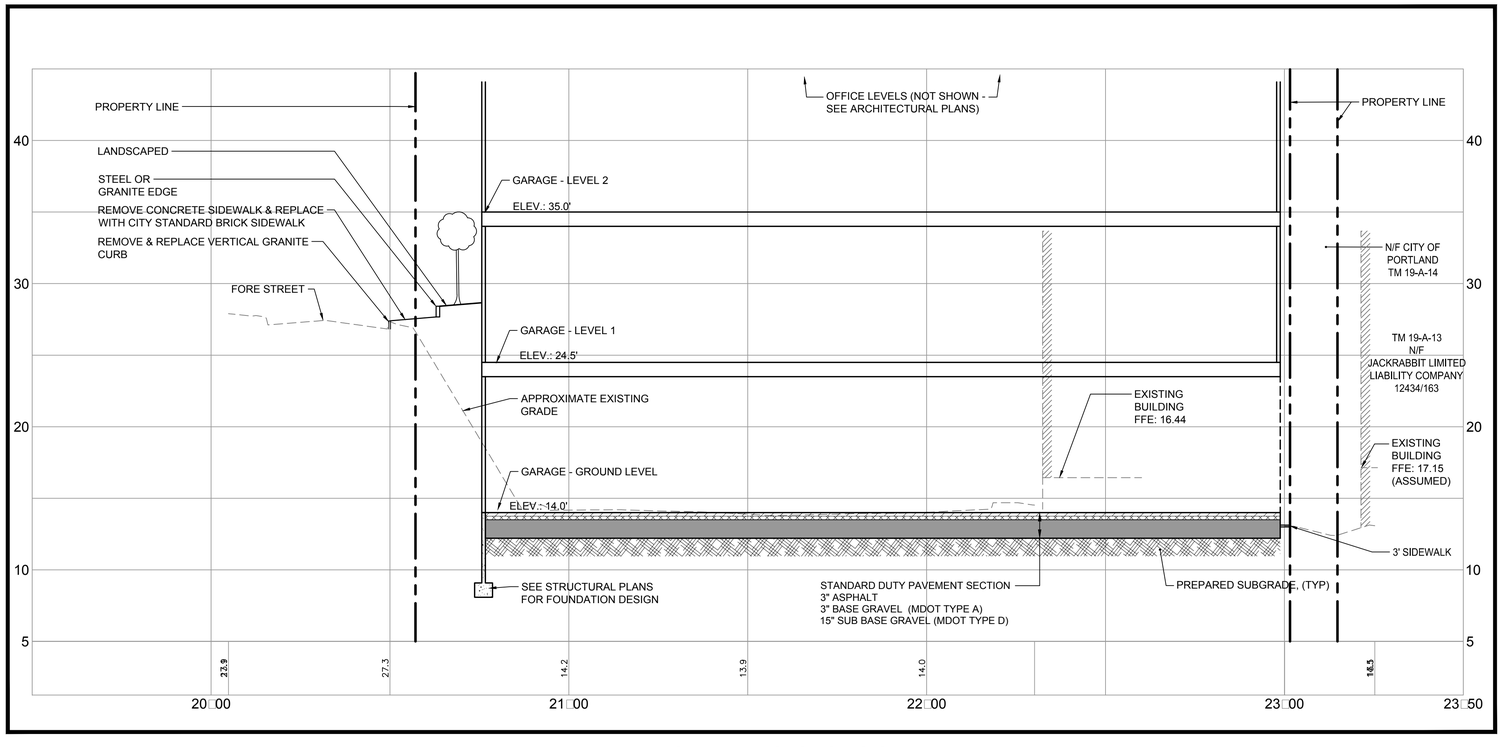


SITE PLAN SECTION B-B

HZ: 1" = 20'
VT: 1" = 5'



SITE PLAN SECTION C-C

HZ: 1" = 20'
VT: 1" = 5'

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Revision	By	Appd.	YY.MM.DD
7 FINAL PLAN SUBMISSION TO CITY	SRB	SRB	18.12.17
6 LEVEL III RESUBMISSION TO CITY	SRB	SRB	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4 LEVEL III RESUBMISSION TO CITY	SRB	SRB	18.11.09
3 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2 PROGRESS SET	SRB	SRB	18.09.24
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 195350450_SP	P&F	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHK'D.	DSGN.	DATE

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WESTBROOK, ME

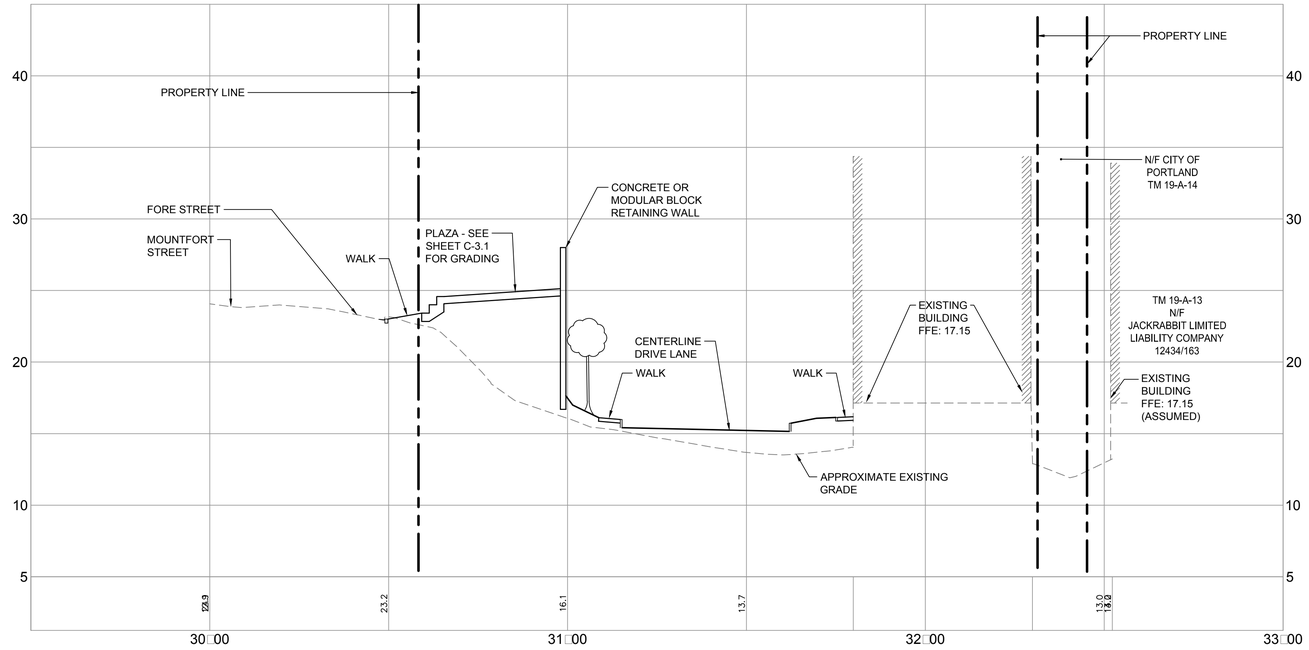
100 FORE STREET
PORTLAND, MAINE

Title
SITE CROSS SECTIONS - SHEET 2 OF 3

Project No.
210801622

Scale
AS NOTED

Sheet
C-4.2



SITE PLAN SECTION D-D

HZ: 1" = 20'
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No.	Revision	By	Appd.	YY.MM.DD
7	FINAL PLAN SUBMISSION TO CITY	SRB	SRB	18.12.17
6	LEVEL III RECSUBMISSION TO CITY	SRB	SRB	18.11.30
5	PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4	LEVEL III RECSUBMISSION TO CITY	SRB	SRB	18.11.09
3	LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2	PROGRESS SET	SRB	SRB	18.09.24
1	INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 195350450_SP	PBF	DBS	SRB	18.09.14
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WESTBROOK, ME

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Title
SITE CROSS SECTIONS - SHEET 3 OF 3

Project No. 210801622
Scale AS NOTED

Sheet
C-4.3

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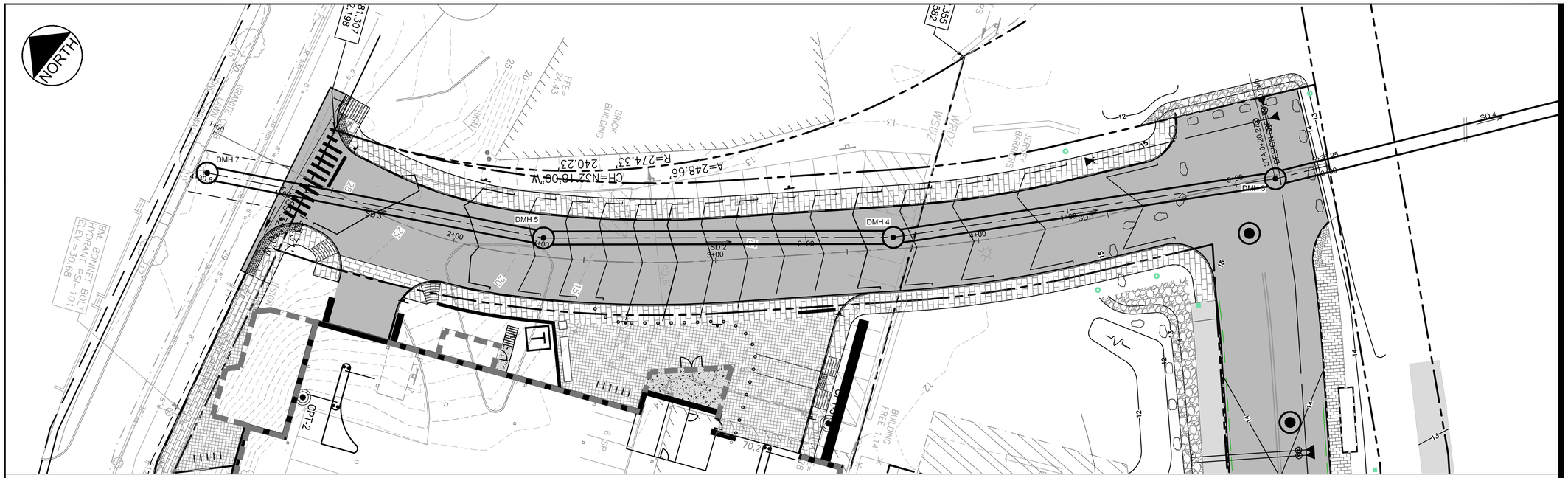

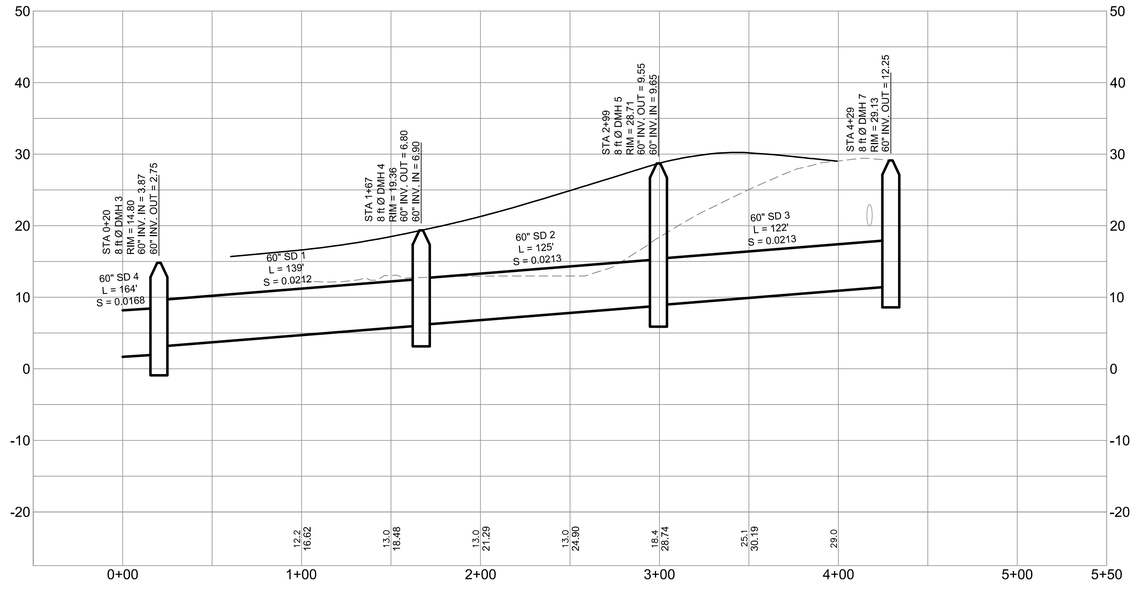

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No.	Revision	By	Appd.	YY.MM.DD
6	LEVEL III RECSUBMISSION TO CITY	SRB	SRB	18.11.30
5	PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4	LEVEL III RECSUBMISSION TO CITY	SRB	SRB	18.11.09
3	LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2	PROGRESS SET	SRB	SRB	18.09.24
1	INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 01620_PROFILE-SD	PBF	DBS	SRB	18.09.14
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PROFESSIONAL ENGINEER

Client/Project
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WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
ACCESS ROAD STORM DRAIN PROFILE

Project No. 210801622
Scale AS NOTED

Sheet
C-4.6

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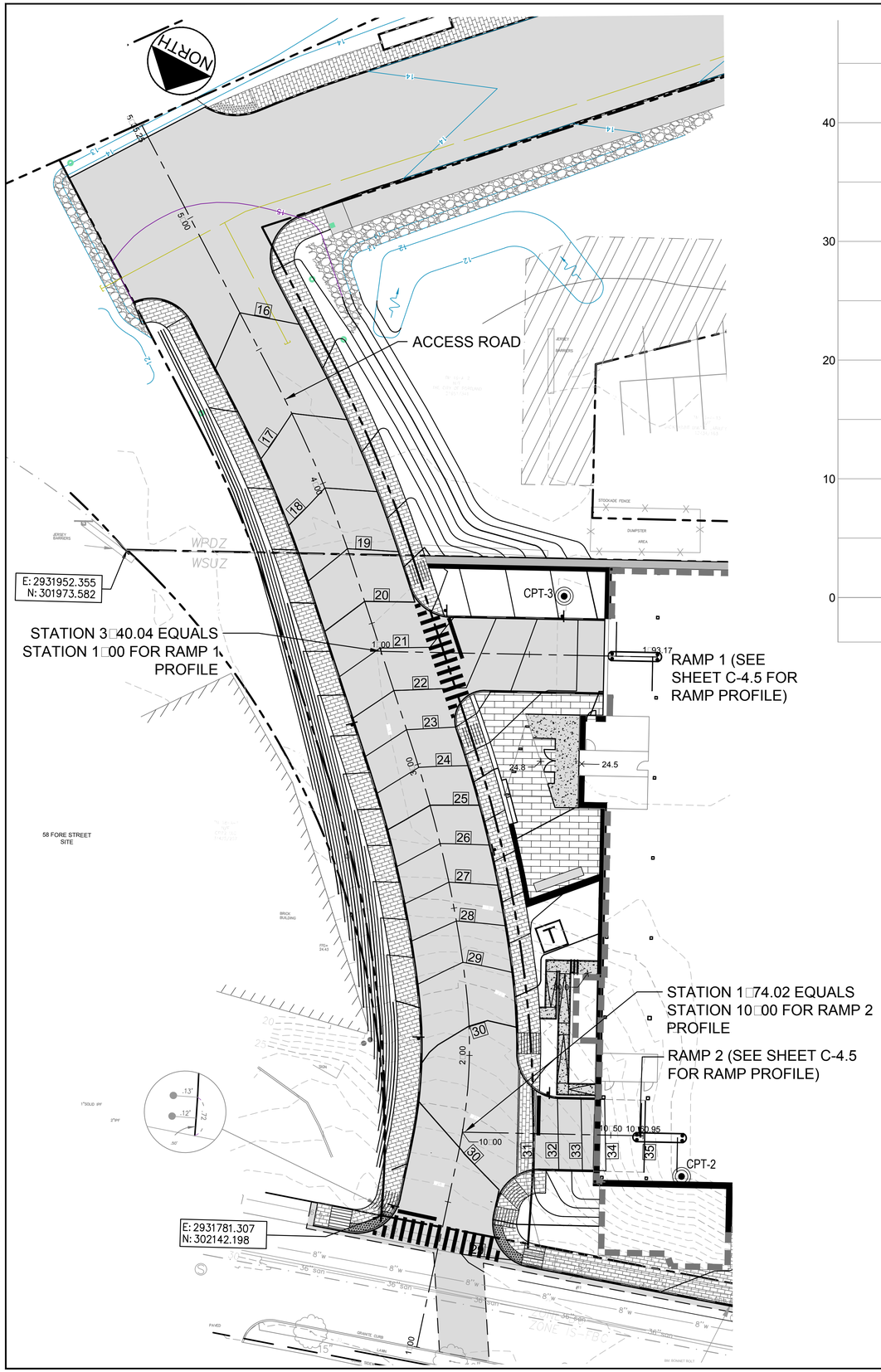

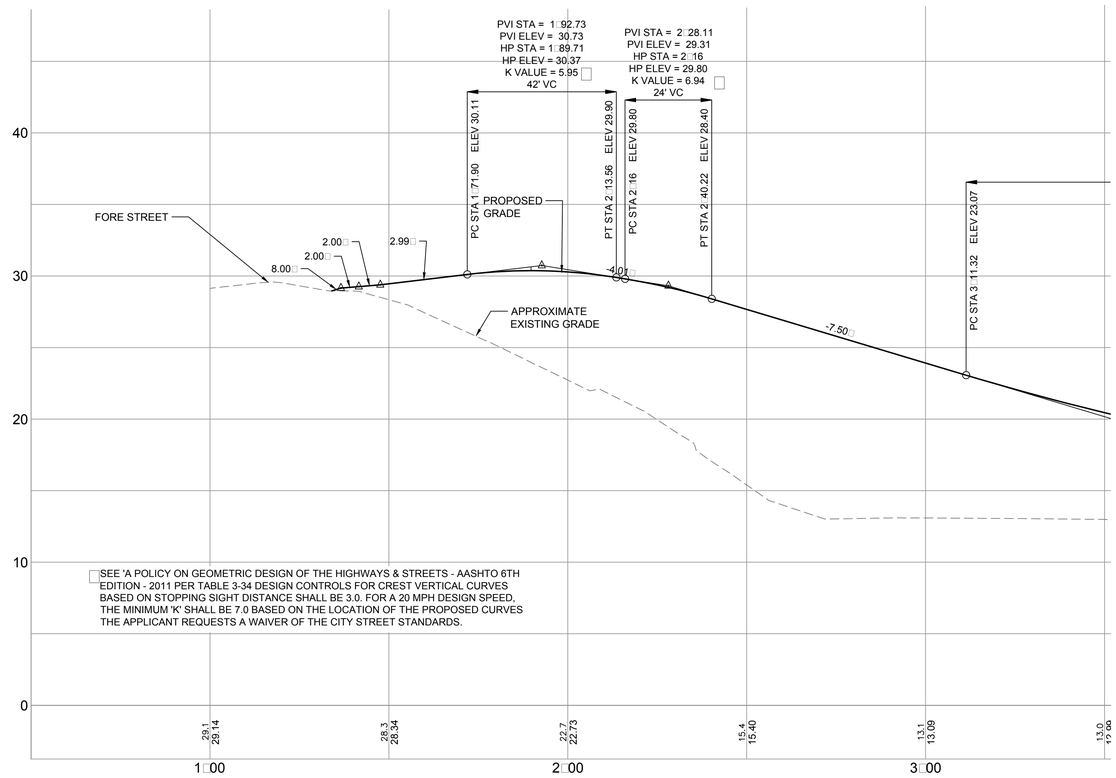

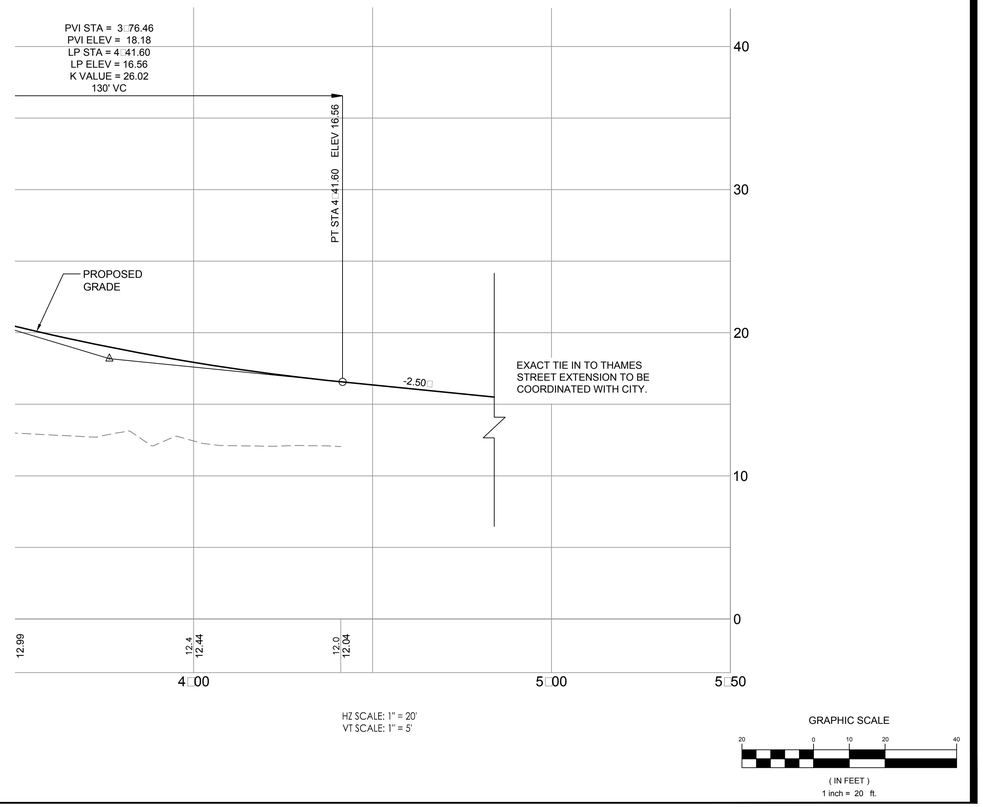

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Revision	By	Appd.	YY.MM.DD
7 FINAL PLAN SUBMISSION TO CITY	SRB	SRB	18.12.17
6 LEVEL III RE-SUBMISSION TO CITY	SRB	SRB	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4 LEVEL III RE-SUBMISSION TO CITY	SRB	SRB	18.11.09
3 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2 PROGRESS SET	SRB	SRB	18.09.24
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 01622_road_prof	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

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STATE OF MAINE
STEPHEN R. BUSHEY
12-17-18
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PROFESSIONAL ENGINEER

Client/Project
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WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
ACCESS ROAD PLAN AND PROFILE

Project No. 210801622
Scale N.T.S.

Sheet
C-4.4

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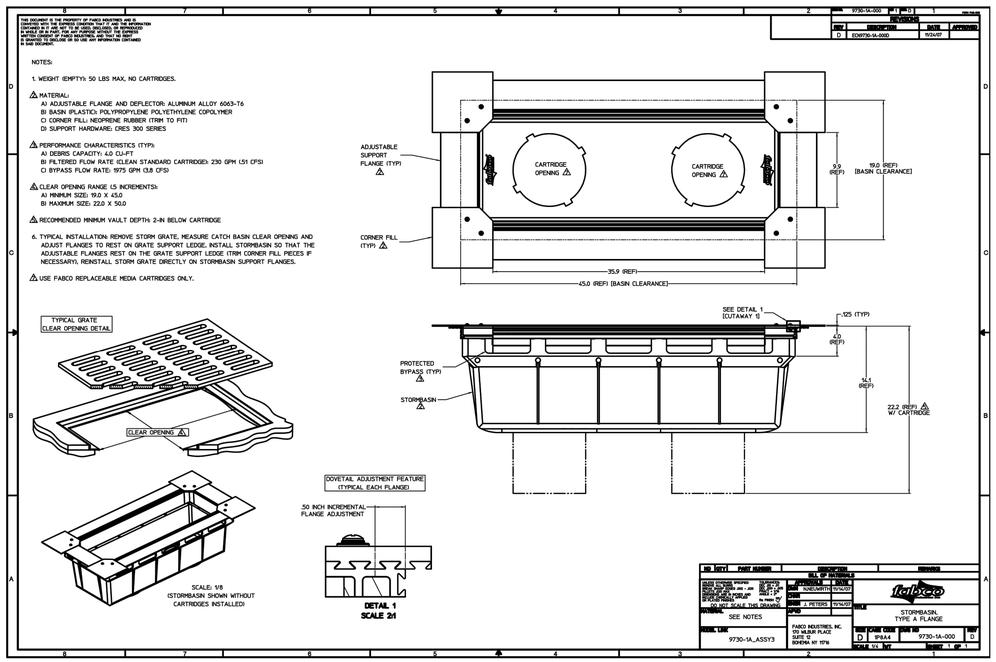

A STORM BASIN TYPE A FLANGE
N.T.S.

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ATTN: JONATHAN COHEN

Revision	By	Appd.	YY.MM.DD
7 FINAL PLAN SUBMISSION TO CITY	SRB	SRB	18.12.17
6 LEVEL III RESUBMISSION TO CITY	SRB	SRB	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4 LEVEL III RESUBMISSION TO CITY	SRB	SRB	18.10.09
3 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.09.24
2 PROGRESS SET	SRB	SRB	18.09.14
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 210801622_det	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHK'D.	DSGN.	DATE

Permit-Seal

STATE OF MAINE
STEPHEN R. BUSHEY
12-17-18
LICENSED PROFESSIONAL ENGINEER

Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
MISCELLANEOUS DETAILS

Project No.
210801622

Scale
N.T.S.

Sheet
C-6.6

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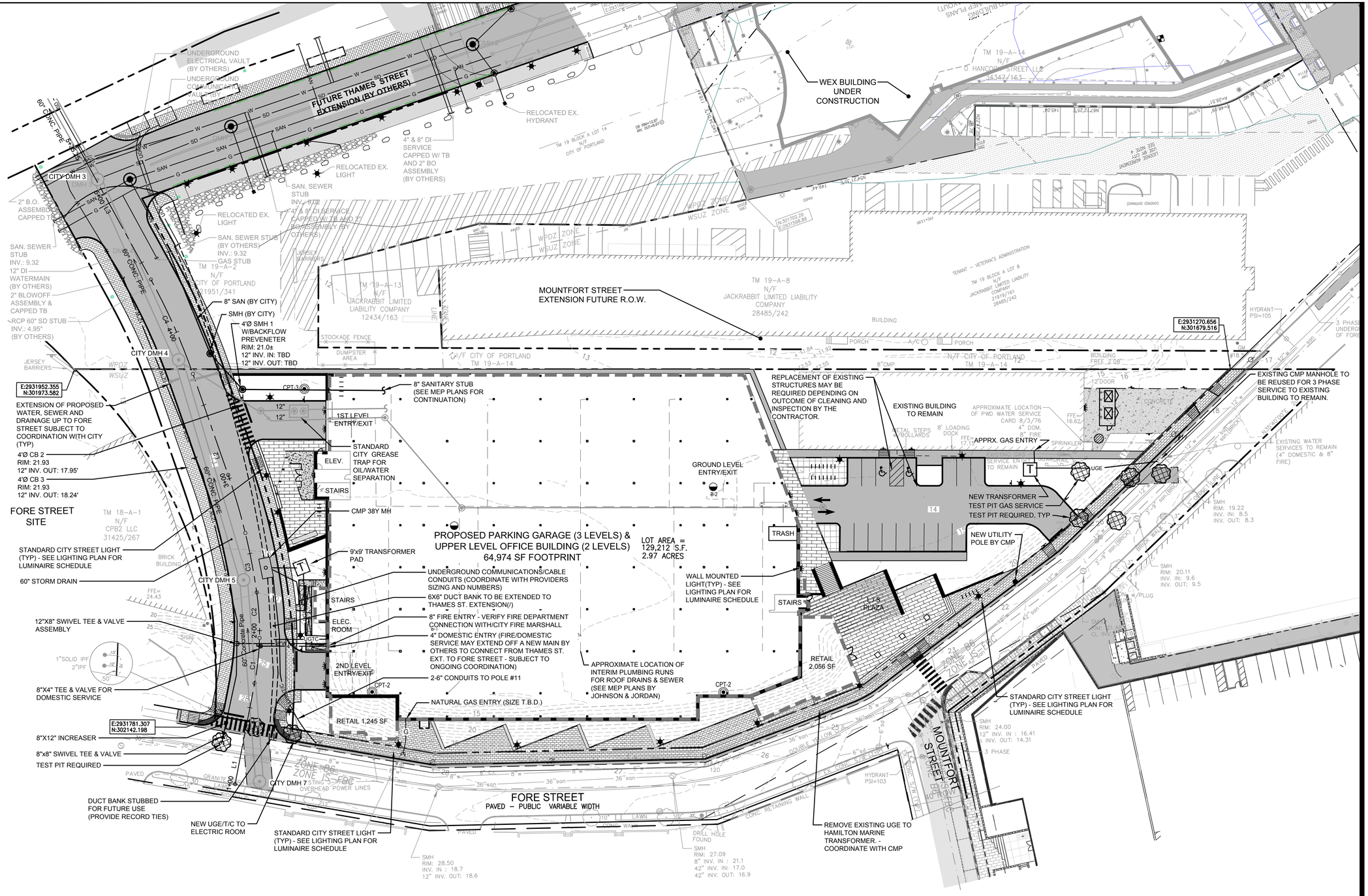

PLAN REFERENCES:

1. "Topographic Survey. 100 Fore Street, Portland, Maine, made for Jonathan Cohen, P.O. Box 910, 865 Spring Street, Westbrook, Maine 04092", by Owen Haskell, Inc., Date: last revised 09/06/2018.
2. Building plans by Archetype, P.A.
3. "Site Development Plans for a commercial office building on Thames Street Property (One Hancock Street), Portland, Maine, November 2017, Construction Set", (Wex project), prepared by Stantec.
4. Portland sewer system infiltration - inflow analysis mapping by Hunter - Ballew associates, 1981. sheet N-3.
5. Utility Plan/Permit Set "Thames Street Extension Project", made for the City of Portland Maine 04101, Plans by: Woodward & Curran, dated May, 2018.

UTILITY NARRATIVE:

1. EXISTING NATURAL GAS LOCATIONS PER CITY AS BUILT RECORDS' "UNITIL GAS DISTRIBUTION, 100 FORE STREET, PORTLAND MAINE", DATED 6/18/2018.
2. EXISTING WATER MAIN INFORMATION IS TAKEN FROM PORTLAND WATER DISTRICT RECORDS. 100 FORE STREET WATER SERVICE LOCATIONS ARE TAKEN FROM PWD WATER SERVICE CARD, DATED 08/03/76.
3. EXISTING SEWER INFORMATION PER CITY I&I MAPPING. 100 FORE STREET SEWER SERVICE LOCATION IS UNKNOWN PER CITY RECORDS.
4. EXISTING POWER AND COMMUNICATIONS LOCATIONS WERE LOCATED IN FIELD BY OWEN HASKELL ON / /18.

PRELIMINARY - NOT FOR CONSTRUCTION

NORTH

GRAPHIC SCALE
30 0 15 30 60
(IN FEET)
1 inch = 30 ft.

V:\2108\active\210801622\civil\cad\permit\dwg\010622_sp.dwg, pfillette, 12/18/2018 12:52 PM

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482 Payne Road Scarborough Court
Scarborough, Maine 04074-8929
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Consultants
ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
ALA
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

Revision	By	Appd.	YY.MM.DD
7 FINAL PLAN SUBMISSION TO CITY	SRB	SRB	18.12.17
6 LEVEL III RE-SUBMISSION TO CITY	SRB	SRB	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4 LEVEL III RE-SUBMISSION TO CITY	SRB	SRB	18.11.09
3 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2 PROGRESS SET	SRB	SRB	18.09.24
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 195350450_SP | DWN. DBS | CHKD. SRB | DSGN. | 18.09.12 DATE
P.E. STEPHEN R. BUSHEY

Permit-Seal
STATE OF MAINE
STEPHEN R. BUSHEY
12-17-18
LICENSED PROFESSIONAL ENGINEER

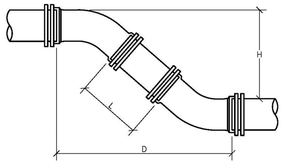
Client/Project
100 FORE STREET LLC
WESTBROOK, ME

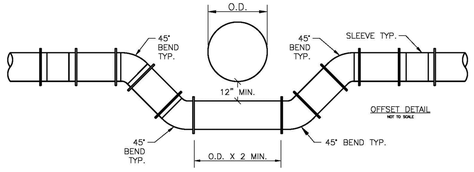
100 FORE STREET
PORTLAND, MAINE

Title
UTILITY PLAN

Project No. 210801622
Scale 1" = 30'

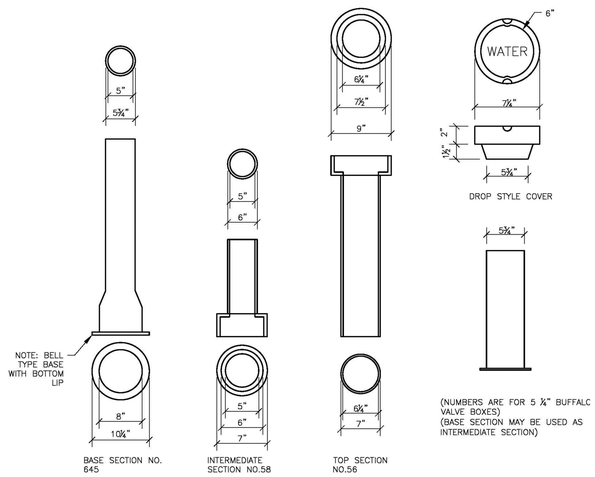
Sheet
C-5.0





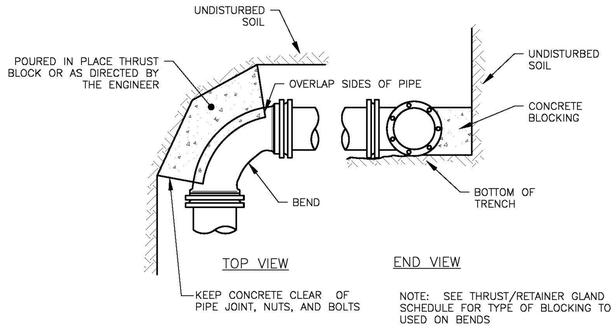
TYPICAL MAIN OFFSET

H	6" PIPE D	6" PIPE L	8" PIPE D	8" PIPE L	12" PIPE D	12" PIPE L
12"	1' 6-1/2"	0' 10-1/2"	1' 7-1/2"	0' 9-1/2"	1' 11-1/2"	0' 5-1/2"
13"	1' 7-1/2"	0' 11-7/8"	1' 8-1/2"	0' 10-7/8"	2' 0-1/2"	0' 6-7/8"
14"	1' 8-1/2"	1' 1-5/16"	1' 9-1/2"	1' 0-5/16"	2' 1-1/2"	0' 8-5/16"
15"	1' 9-1/2"	1' 2-11/16"	1' 10-1/2"	1' 1-11/16"	2' 2-1/2"	0' 9-11/16"
16"	1' 10-1/2"	1' 4-1/8"	1' 11-1/2"	1' 3-1/8"	2' 3-1/2"	0' 11-1/8"
17"	1' 11-1/2"	1' 5-9/16"	2' 0-1/2"	1' 4-9/16"	2' 4-1/2"	1' 0-9/16"
18"	2' 0-1/2"	1' 6-15/16"	2' 1-1/2"	1' 5-15/16"	2' 5-1/2"	1' 1-15/16"
19"	2' 1-1/2"	1' 8-3/8"	2' 2-1/2"	1' 7-3/8"	2' 6-1/2"	1' 3-3/8"
20"	2' 2-1/2"	1' 9-13/16"	2' 3-1/2"	1' 8-13/16"	2' 7-1/2"	1' 4-13/16"
21"	2' 3-1/2"	1' 11-3/16"	2' 4-1/2"	1' 10-3/16"	2' 8-1/2"	1' 6-3/16"
22"	2' 4-1/2"	2' 0-5/8"	2' 5-1/2"	1' 11-9/16"	2' 9-1/2"	1' 7-5/8"
23"	2' 5-1/2"	2' 2"	2' 6-1/2"	2' 1"	2' 10-1/2"	1' 9"
24"	2' 6-1/2"	2' 3-7/16"	2' 7-1/2"	2' 2-7/16"	2' 11-1/2"	1' 10-7/16"
25"	2' 7-1/2"	2' 4-7/8"	2' 8-1/2"	2' 3-7/8"	3' 0-1/2"	1' 11-7/8"
26"	2' 8-1/2"	2' 6-1/4"	2' 9-1/2"	2' 5-1/4"	3' 1-1/2"	2' 1-1/4"
27"	2' 9-1/2"	2' 7-11/16"	2' 10-1/2"	2' 6-11/16"	3' 2-1/2"	2' 2-11/16"
28"	2' 10-1/2"	2' 9-1/8"	2' 11-1/2"	2' 8-1/8"	3' 3-1/2"	2' 4-1/8"
29"	2' 11-1/2"	2' 10-1/2"	3' 0-1/2"	2' 9-1/2"	3' 4-1/2"	2' 5-1/2"
30"	3' 0-1/2"	2' 11-15/16"	3' 1-1/2"	2' 10-15/16"	3' 5-1/2"	2' 6-15/16"
31"	3' 1-1/2"	3' 1-5/16"	3' 2-1/2"	3' 0-5/16"	3' 6-1/2"	2' 8-5/16"
32"	3' 2-1/2"	3' 2-3/4"	3' 3-1/2"	3' 1-3/4"	3' 7-1/2"	2' 9-3/4"
33"	3' 3-1/2"	3' 4-3/16"	3' 4-1/2"	3' 3-3/16"	3' 8-1/2"	2' 11-3/16"
34"	3' 4-1/2"	3' 5-9/16"	3' 5-1/2"	3' 4-9/16"	3' 9-1/2"	3' 0-9/16"
35"	3' 5-1/2"	3' 7"	3' 6-1/2"	3' 6"	3' 10-1/2"	3' 2"
36"	3' 6-1/2"	3' 8-7/16"	3' 7-1/2"	3' 7-7/16"	3' 11-1/2"	3' 3-7/16"
37"	3' 7-1/2"	3' 9-13/16"	3' 8-1/2"	3' 8-13/16"	4' 0-1/2"	3' 4-13/16"
38"	3' 8-1/2"	3' 11-1/4"	3' 9-1/2"	3' 10-1/4"	4' 1-1/2"	3' 6-1/4"
39"	3' 9-1/2"	4' 0-11/16"	3' 10-1/2"	3' 11-11/16"	4' 2-1/2"	3' 7-11/16"
40"	3' 10-1/2"	4' 2-1/16"	3' 11-1/2"	4' 1-1/16"	4' 3-1/2"	3' 9-1/16"
41"	3' 11-1/2"	4' 3-1/2"	4' 0-1/2"	4' 2-1/2"	4' 4-1/2"	3' 10-1/2"
42"	4' 0-1/2"	4' 4-7/8"	4' 1-1/2"	4' 3-7/8"	4' 5-1/2"	3' 11-7/8"
43"	4' 1-1/2"	4' 6-5/16"	4' 2-1/2"	4' 5-5/16"	4' 6-1/2"	4' 1-5/16"
44"	4' 2-1/2"	4' 7-3/4"	4' 3-1/2"	4' 6-3/4"	4' 7-1/2"	4' 2-3/4"
45"	4' 3-1/2"	4' 9-1/8"	4' 4-1/2"	4' 8-1/8"	4' 8-1/2"	4' 4-1/8"
46"	4' 4-1/2"	4' 10-9/16"	4' 5-1/2"	4' 9-9/16"	4' 9-1/2"	4' 5-9/16"
47"	4' 5-1/2"	4' 11-15/16"	4' 6-1/2"	4' 10-15/16"	4' 10-1/2"	4' 6-15/16"
48"	4' 6-1/2"	5' 1-3/8"	4' 7-1/2"	5' 0-3/8"	4' 11-1/2"	4' 8-3/8"
49"	4' 7-1/2"	5' 2-13/16"	4' 8-1/2"	5' 1-13/16"	5' 0-1/2"	4' 9-13/16"
50"	4' 8-1/2"	5' 4-3/16"	4' 9-1/2"	5' 3-3/16"	5' 1-1/2"	4' 11-3/16"
51"	4' 9-1/2"	5' 5-5/8"	4' 10-1/2"	5' 4-5/8"	5' 2-1/2"	5' 0-5/8"
52"	4' 10-1/2"	5' 7-1/16"	4' 11-1/2"	5' 6-1/16"	5' 3-1/2"	5' 2-1/16"
53"	4' 11-1/2"	5' 8-7/16"	5' 0-1/2"	5' 7-7/16"	5' 4-1/2"	5' 3-7/16"
54"	5' 0-1/2"	5' 9-7/8"	5' 1-1/2"	5' 8-7/8"	5' 5-1/2"	5' 4-7/8"
55"	5' 1-1/2"	5' 11-5/16"	5' 2-1/2"	5' 10-5/16"	5' 6-1/2"	5' 6-5/16"



VALVE BOX & COVER

Ⓐ SNOWMELT PAVER DETAIL (LOCATIONS T.B.D.)
N.T.S.



Ⓒ STANDARD BEND BLOCKING
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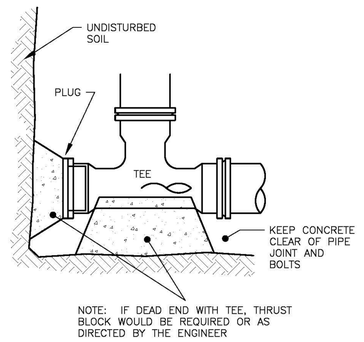

Ⓓ SPLICE BOX DETAIL
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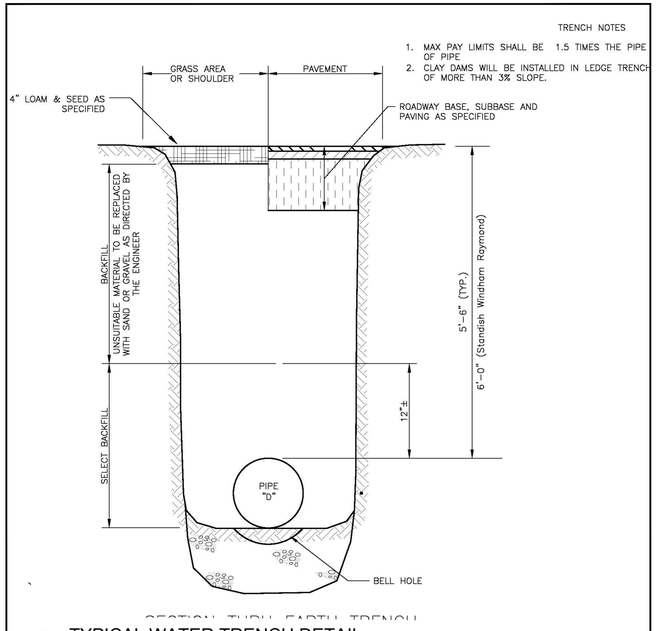

Ⓑ TYPICAL WATER TRENCH DETAIL
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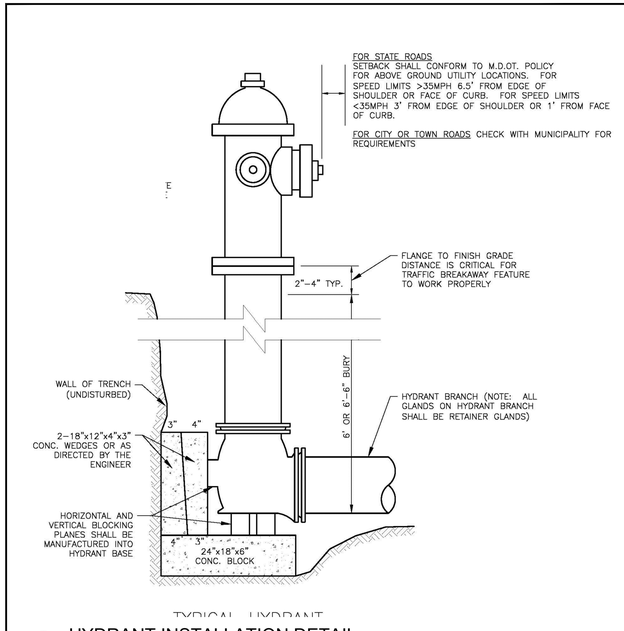

Ⓔ HYDRANT INSTALLATION DETAIL
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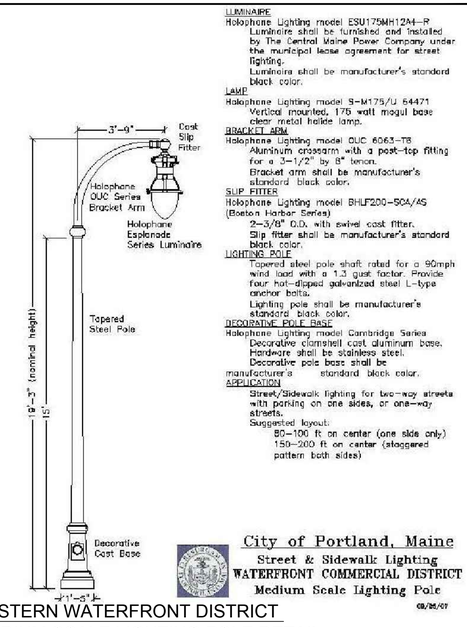

EASTERN WATERFRONT DISTRICT
MEDIUM SCALE LIGHTING POLE DETAIL
Ⓔ N.T.S.

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Consultants
ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
ALA
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

OWNER:
100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

Revision	By	Appd.	YY.MM.DD
1 INTERNAL REVIEW	SRB		18.09.14
2 PROGRESS SET	SRB		18.09.24
3 LEVEL III SUBMISSION TO CITY	SRB		18.10.09
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5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB		18.11.14
6 LEVEL III RE-SUBMISSION TO CITY	SRB		18.11.30
7 FINAL PLAN SUBMISSION TO CITY	SRB		18.12.17

File Name: 210801622_det	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal
STATE OF MAINE STEPHEN R. BUSHEY 12-17-18 LICENSED PROFESSIONAL ENGINEER

Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
MISCELLANEOUS DETAILS

Project No. 210801622
Scale N.T.S.

Sheet
C-6.5

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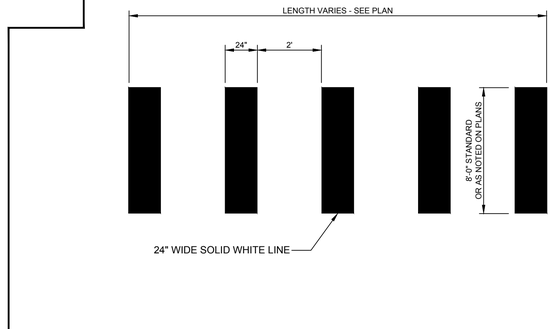
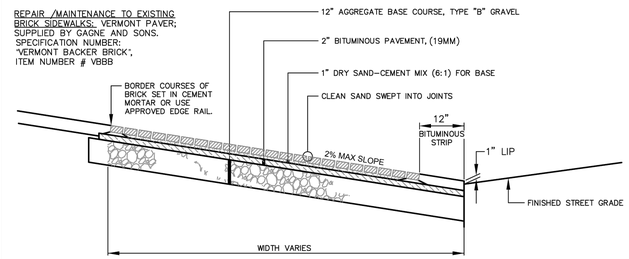


A CROSSWALK STRIPING DETAIL
N.T.S.

BRICKS TO BE USED:

NEW CONSTRUCTION:
4"x8" PINE HALL PATHWAY PAVER BRICK; MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA. LACHANCE ITEM # 193623, PINE HALL PATHWAY PAVER BRICK.

REPAIR /MAINTENANCE TO EXISTING BRICK SIDEWALKS: VERMONT PAVER; SUPPLIED BY GAGNE AND SONS. SPECIFICATION NUMBER: "VERMONT BACKER BRICK", ITEM NUMBER # VBBB



D BRICK DRIVEWAY APRON WITH BITUMINOUS BASE
N.T.S.

NOTES:
ALL RAMPS SHALL COMPLY WITH ADA STANDARDS.

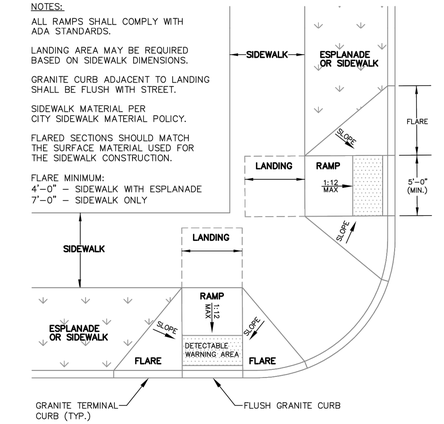
LANDING AREA MAY BE REQUIRED BASED ON SIDEWALK DIMENSIONS.

GRANITE CURB ADJACENT TO LANDING SHALL BE FLUSH WITH STREET.

SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.

FLARED SECTIONS SHOULD MATCH THE SURFACE MATERIAL USED FOR THE SIDEWALK CONSTRUCTION.

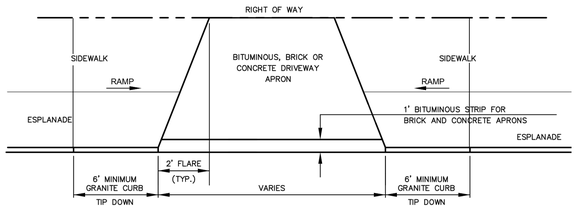
FLARE MINIMUM:
4'-0" – SIDEWALK WITH ESPLANADE
7'-0" – SIDEWALK ONLY



G PREFERRED SIDEWALK RAMP AT INTERSECTION
N.T.S.

AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL"

NOTE:
MATCH GRADE OF EXISTING DRIVEWAY AT R. O. W. LINE, EXCEPT WHEN DIRECTED OTHERWISE BY CITY ENGINEER.



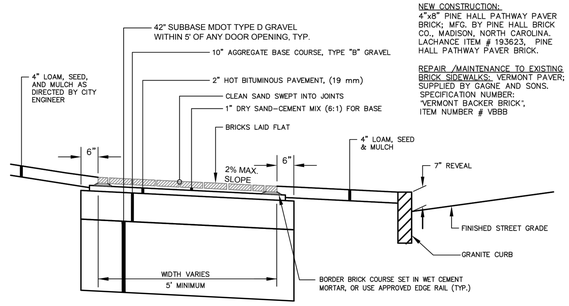
DRIVEWAY APRON LAYOUT
NOT TO SCALE

B DRIVEWAY APRON LAYOUT
N.T.S.

BRICKS TO BE USED:

NEW CONSTRUCTION:
4"x8" PINE HALL PATHWAY PAVER BRICK; MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA. LACHANCE ITEM # 193623, PINE HALL PATHWAY PAVER BRICK.

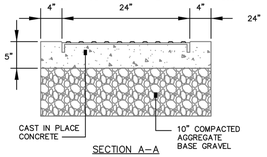
REPAIR /MAINTENANCE TO EXISTING BRICK SIDEWALKS: VERMONT PAVER; SUPPLIED BY GAGNE AND SONS. SPECIFICATION NUMBER: "VERMONT BACKER BRICK", ITEM NUMBER # VBBB



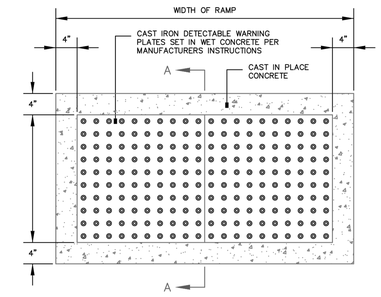
E BRICK SIDEWALK WITH BITUMINOUS BASE
N.T.S.

AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL."

NOTES:
1. ALL DETECTABLE WARNING PLATES SHALL BE UNCOATED CAST IRON. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MDOT CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE EXPOSED CONCRETE BORDER SHALL RECEIVE A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. TRUNCATED DOME BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
4. SIZE: THE DETECTABLE WARNING PLATES SHALL EXTEND 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.
5. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 INCHES MINIMUM AND 8 INCHES MAXIMUM FROM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.



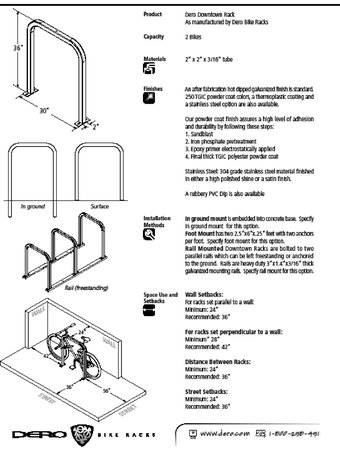
SECTION A–A



PLAN VIEW

H SIDEWALK RAMP DETECTABLE WARNING PANEL
N.T.S.

AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL"



Product: Dero Downtown Rack — As manufactured by Dero Bike Racks

Capacity: 2 Bikes

Materials: 2" x 2" x 3/16" tube

Finishes: An after fabrication hot dipped galvanized finish is standard. 2507GIC powder coat colors, a thermoplastic coating and a stainless steel option are also available.

Our powder coat finish assures a high level of adhesion and durability by following these steps:
1. Sandblast
2. Iron phosphate pretreatment
3. Epoxy primer electrostatically applied
4. Final thick TGIC polyester powder coat

Stainless Steel: 304 grade stainless steel material finished in either a high polished shine or a satin finish.

A rubbery PVC Dip is also available

Installation Methods: In ground mount is embedded into concrete base. Specify in ground mount for this option.
Foot Mount has two 2.5"x4"x.25" feet with two anchors per foot. Specify foot mount for this option.
Rail Mounted: Downtown Racks are bolted to two parallel rails which can be left freestanding or anchored to the ground. Rails are heavy duty 3"x1.4"x3/16" thick galvanized mounting rails. Specify rail mount for this option.

Space Use and Setbacks: Wall Setbacks:
For racks set parallel to a wall:
Minimum: 24"
Recommended: 36"

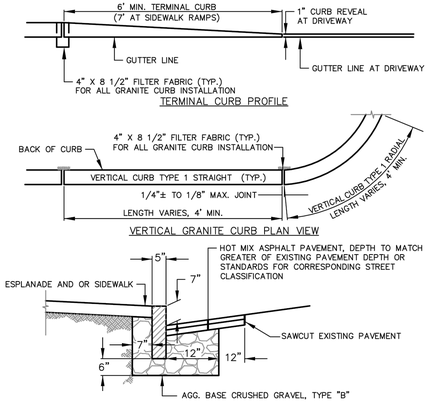
For racks set perpendicular to a wall:
Minimum" 28"
Recommended: 42"

Distance Between Racks:
Minimum: 24"
Recommended: 36"

Street Setbacks:
Minimum: 24"
Recommended: 36"

DERO BIKE RACKS — www.dero.com — 1-800-248-4911

C BICYCLE RACK SPECIFICATION - DOWNTOWN RACK
N.T.S.



TERMINAL CURB PROFILE

VERTICAL GRANITE CURB PLAN VIEW

F VERTICAL GRANITE CURB INSTALLATION IN EXIST. STREETS
N.T.S.

AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL."

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482 Payne Road Scarborough Court
Scarborough, Maine 04074-8929
Tel. 207.883.3355
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ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
ALA
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

OWNER:
100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

No.	Revision	By	Appd.	YY.MM.DD
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6	LEVEL III RE-SUBMISSION TO CITY	SRB		18.11.30
5	PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB		18.11.14
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1	INTERNAL REVIEW	SRB		18.09.14

File Name: 210801622_det	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal
STATE OF MAINE — STEPHEN R. BUSHEY — 12-17-18 — LICENSED PROFESSIONAL ENGINEER

Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
LANDSCAPE, SITE AND SIDEWALK DETAILS

Project No. 210801622
Scale N.T.S.

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C-6.0

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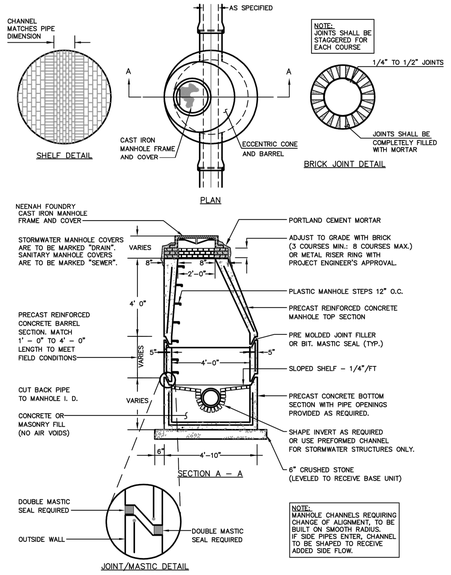
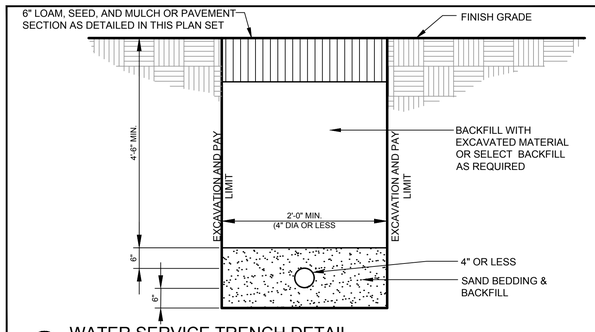


A PRECAST CONCRETE MANHOLE

N.T.S.

AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL"



B WATER SERVICE TRENCH DETAIL

N.T.S.

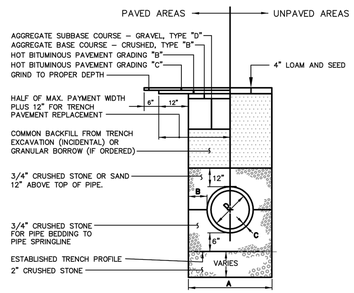
NOTES

1. ALTERNATIVE CONSTRUCTION METHODS OR PAYMENT METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. IN PAVED AREAS, DEPTHS OF GRAVEL AND HOT MIX ASPHALT PAVEMENT SHALL MATCH THE GREATER OF EXISTING CONDITIONS OR THE REQUIREMENTS FOR THE CORRESPONDING STREET CLASSIFICATION.
3. DIMENSION **B** SHALL BE SUFFICIENT TO ALLOW CRUSHED STONE BEDDING TO BE PLACED AND COMPACTED UNDER THE HAUNCHES OF THE PIPE; BUT IN ALL CASES DIMENSION **B** SHALL BE AT LEAST 6".
4. DIMENSION **A** IS THE MAXIMUM WIDTH ALLOWED FOR CALCULATING PAY QUANTITIES UNDER GRANULAR BORROW, CRUSHED STONE, STRUCTURAL EARTH EXCAVATION, AND STRUCTURAL ROCK EXCAVATION. DIMENSION **A** SHALL BE BASED ON PIPE DIAMETER **D**, AS SET FORTH IN THE FOLLOWING TABLE.

PIPE DIAMETER, **D** (INCHES)	MAX. TRENCH WIDTH, **A** (FEET)
4 – – – –	4.0
6	4.0
8	4.0
10	4.0
12	5.0
15	5.0
18 – – – –	5.0
21	5.0
24	6.0
27	6.0
30	6.0
36 – – – –	6.0
42	7.0
48	7.0

NOTES:
DEPTH OF BITUMINOUS PAVEMENT AND AGGREGATE COURSES SHALL BE DETERMINED BY STREET CLASSIFICATION.

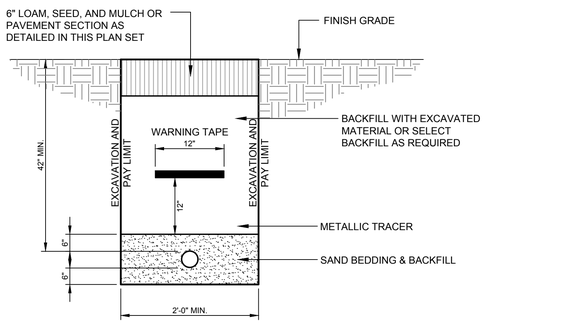
ANY ALTERNATE TRENCHING OR PAYMENT METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY OF PORTLAND, DEPARTMENT OF PUBLIC SERVICES..



D TYPICAL PIPE TRENCH INSTALLATION AND NOTES

N.T.S.

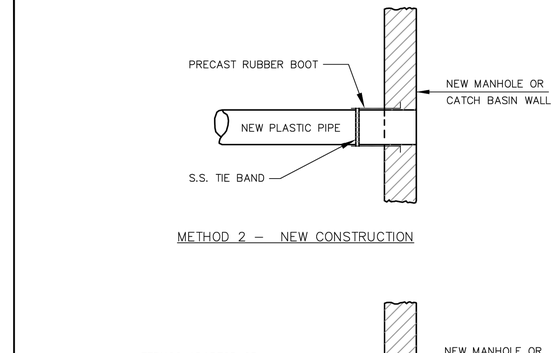
AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL"



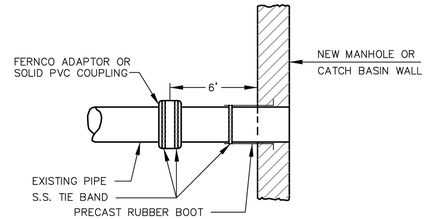
NOTE:
GAS LINE TO BE INSTALLED BY OTHERS. SITE CONTRACTOR IS RESPONSIBLE FOR EXCAVATION AND BACKFILL OF THE GAS LINE AND PLACEMENT OF THE WARNING TAPES AND TRACER.

E GAS SERVICE TRENCH SECTION

N.T.S.



METHOD 2 – NEW CONSTRUCTION



METHOD 1 – EXISTING PIPE INTO NEW STRUCTURE

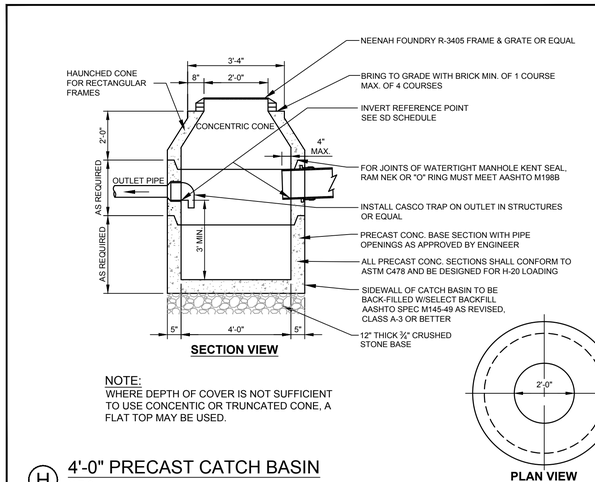
PLASTIC PIPE CONNECTIONS

NOT TO SCALE

H PLASTIC PIPE CONNECTION METHODS 1 & 2

N.T.S.

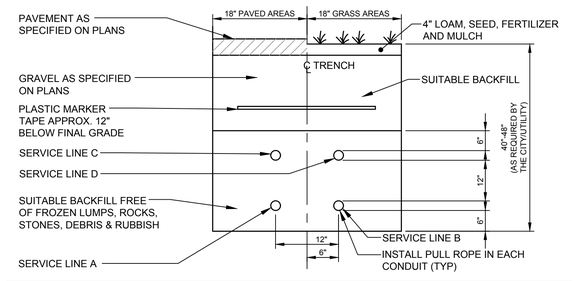
AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL"



NOTE:
WHERE DEPTH OF COVER IS NOT SUFFICIENT TO USE CONCENTIC OR TRUNCATED CONE, A FLAT TOP MAY BE USED.

H 4'-0" PRECAST CATCH BASIN

N.T.S.



CONDUIT TYPE

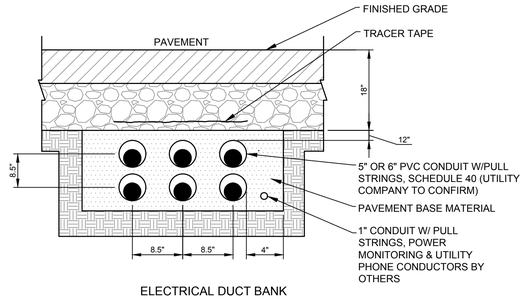
SERVICE	CONDUIT SIZE	GRASS AREAS	PAVED AREAS	UTILITY	REMARKS
A	2-6"	SCHEDULE 40 PVC ELECTRICAL GRADE	RIGID GALVANIZED STEEL, ASTM A120*	POWER	SEE NOTE
B	2-4"	SCHEDULE 40 PVC	RIGID GALVANIZED STEEL, ASTM A120*	TELEPHONE	SEE NOTE
C	2-4"	SCHEDULE 40 PVC	RIGID GALVANIZED STEEL, ASTM A120*	COMMUNICATION	SEE NOTE
D	2-4"	SCHEDULE 40 PVC	RIGID GALVANIZED STEEL, ASTM A120*	SPARES	SEE NOTE

*AS REQUIRED BY CITY /UTILITY

NOTES:
1. ONE CONDUIT CAPPED FOR SPARE, PROVIDE GALVANIZED STEEL LONG SWEEP AT RISER POLE AND EXTEND GALVANIZED CONDUIT TO 10' ABOVE GRADE AT POLE WITH STAND-OFF BRACKETS. COORDINATE WITH ELECTRICAL SITE PLANS BY E.S. BOULOS.
2. IN CITY RIGHT OF WAY, CONDUITS TO HAVE 36" MIN. COVER AND BE ENCASED WITH MIN. 3" CONCRETE ON ALL SIDES.

F UTILITY TRENCH - PRIMARY ELEC., TEL. & COMM.

N.T.S.



ELECTRICAL DUCT BANK
SIX ELECTRICAL DUCTS

NOTES:
1. CONDUIT BANK WILL EXTEND 5' BEYOND FOUNDATION WALL. CAP ALL CONDUITS.

I SECONDARY UNDERGROUND ELECTRIC CONDUIT BANK DETAIL

N.T.S.

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ARCHETYPE

LANDSCAPE ARCHITECT
ALA

SURVEYOR
OWEN HASKELL

CONTRACTOR
CIANBRO

Notes

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865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

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Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
STORMDRAIN AND UTILITY DETAILS

Project No.	Scale
210801622	N.T.S.

Sheet
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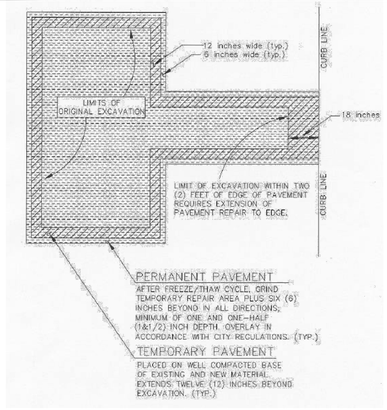
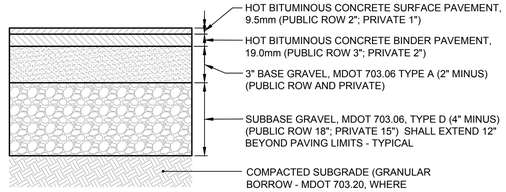


A PLAN VIEW OF MINOR EXCAVATION PAVEMENT REPAIR

A

AS OBTAINED FROM THE CITY OF PORTLAND "RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN THE PUBLIC RIGHT OF WAY"

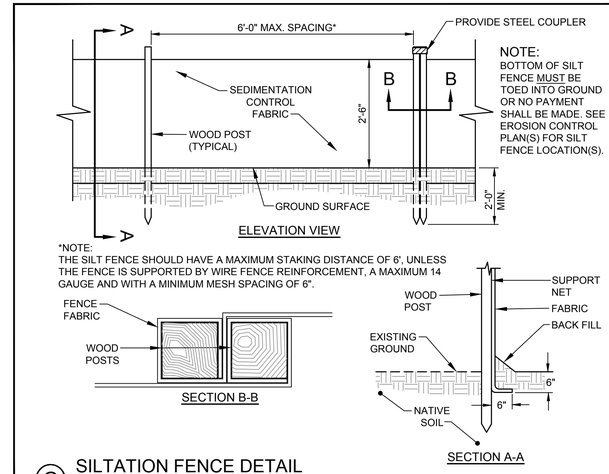


NOTES:

1. APPLY TACK COAT BETWEEN BINDER AND SURFACE COURSES.
2. ALL MATERIALS SHALL CONFORM TO MDOT SPECIFICATIONS, LATEST REVISION AND/OR CITY OF PORTLAND TECHNICAL STANDARD, WHICHEVER IS MORE STRINGENT. COMPACTION OF ALL MATERIALS TO BE IN ACCORDANCE WITH THE SPECIFICATIONS AND THE GEOTECHNICAL REPORT.

D BITUMINOUS CONCRETE PAVEMENT SECTION

N.T.S.



G SILTATION FENCE DETAIL

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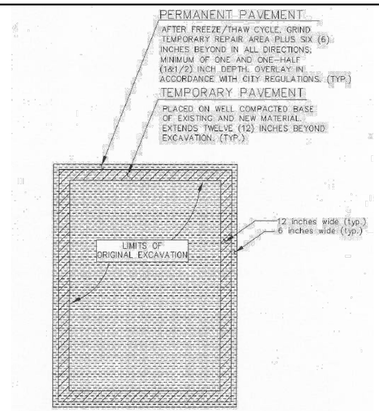
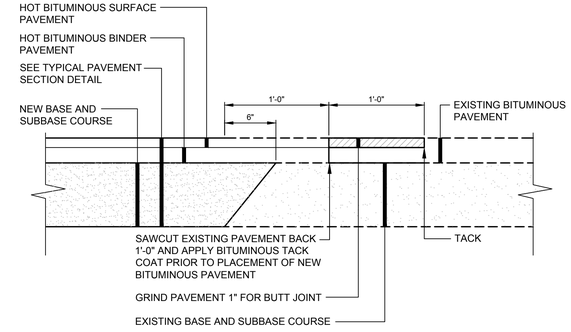


B PLAN VIEW OF MINOR EXCAVATION PAVEMENT REPAIR

B

AS OBTAINED FROM THE CITY OF PORTLAND "RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN THE PUBLIC RIGHT OF WAY"



E PAVEMENT SAWCUT DETAIL

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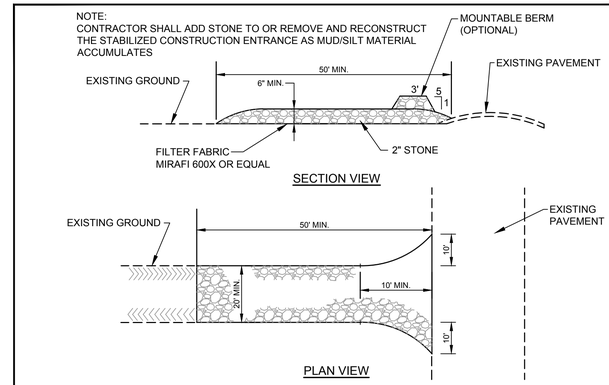
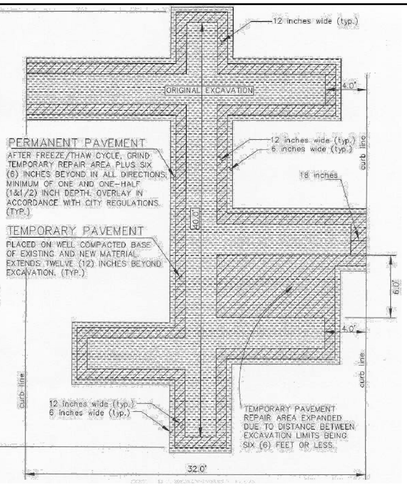


H STABILIZED CONSTRUCTION ENTRANCE DETAIL

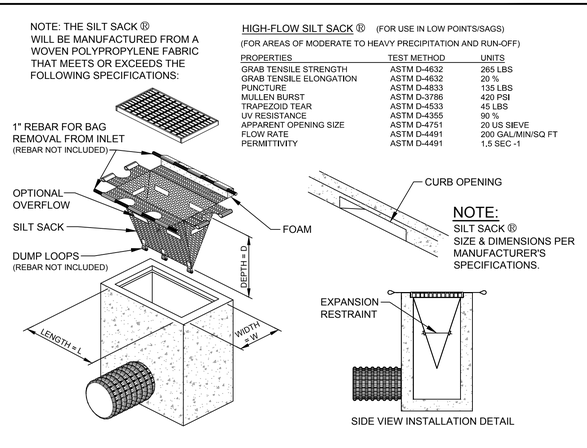
N.T.S.



C PLAN VIEW OF MAJOR EXCAVATION PAVEMENT REPAIR

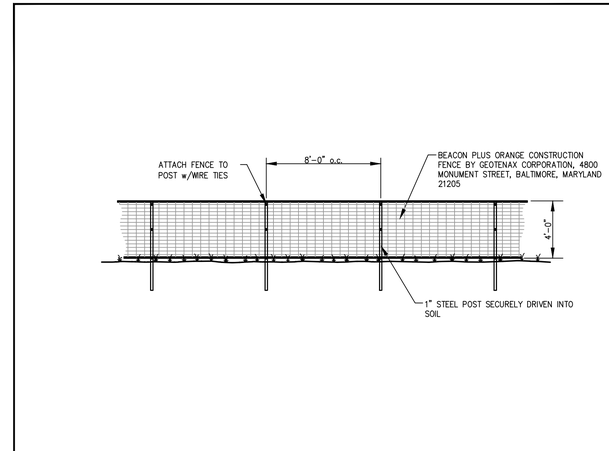
C

AS OBTAINED FROM THE CITY OF PORTLAND "RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN THE PUBLIC RIGHT OF WAY"



F SILT SACK® DETAIL & SPECIFICATIONS

N.T.S.



I ORANGE CONSTRUCTION FENCE DETAIL

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File Name: 210801622_det	P&F	DBS	SRB	18.09.14
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Permit-Seal

STATE OF MAINE
STEPHEN R. BUSHEY
12-17-18
LICENSED PROFESSIONAL ENGINEER

Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
PAVEMENT, EROSION AND MISCELLANEOUS DETAILS

Project No. 210801622
Scale N.T.S.

Sheet
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NOTES:

1. WEIGHT (APPROX):
   A) EMPTY W/CARTRIDGES: 50-LB (MAX)
   B) FULL OF WATER: 1800-LB (MAX)

2. MATERIAL:
   A) FILTER HOUSING AND COVER: HDPE, WHITE
   B) CARTRIDGE PLATE: 5052-H32 ALUMINUM ALLOY
   C) SUPPORT HARDWARE: CRES 300 SERIES OR EQUAL

3. PERFORMANCE CHARACTERISTICS (TYP):
   A) DEBRIS CAPACITY: 11.0 CU-FT
   B) FILTERED FLOW RATE: SEE TABLE 1
   C) BYPASS FLOW RATE: 3100 GPM (6.9 CFS)

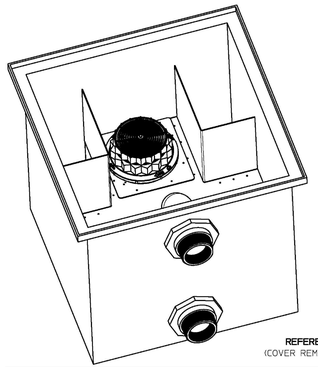
4. TYPICAL INSTALLATION: CUT DOWNSPOUT PIPE AND CONNECT THE 4" INLET AND OUTLET PIPES AS REQUIRED TO REDIRECT RAIN FLOW THROUGH THE FILTER BOX.

5. USE ONLY WITH FABCO REPLACEABLE MEDIA CARTRIDGES.

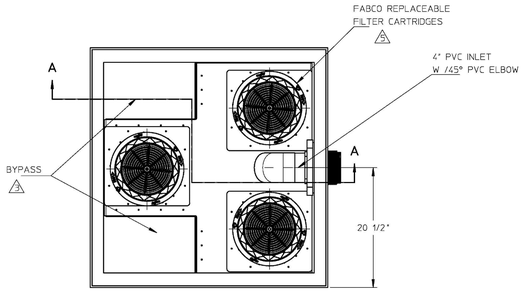
6. ALL TANK DIMENSIONS ARE REFERENCE AND VARY BY THE STANDARD ROTATIONAL MOLDING TOLERANCE OF ± 3%

TABLE 1 (3)(4)
ADDITIONAL CARTRIDGE DESIGNS

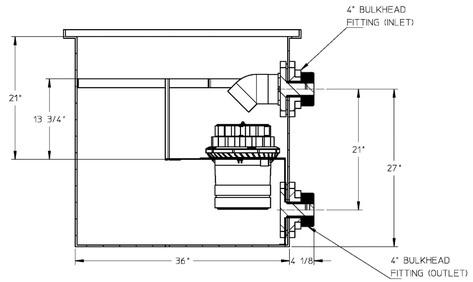
ORDER NUMBER	DESCRIPTION	COLOR CODE	FLOW RATE (TYP)
9718-1	STANDARD	RED	115 GPM (.26 CFS)
9718-2	BACTERIA	YELLOW	115 GPM (.26 CFS)
9718-3	HYDROCARBONS	BLUE	115 GPM (.26 CFS)
9718-4	HEAVY METALS	GREY	60 GPM (.13 CFS)
9718-5	STANDARD (SHORT)	MINT	115 GPM (.26 CFS)
9718-6	NUTRIENTS	GREEN	100 GPM (.22 CFS)
9718-7	HIGH FLOW	RED (MARKED)	260 GPM (.58 CFS)



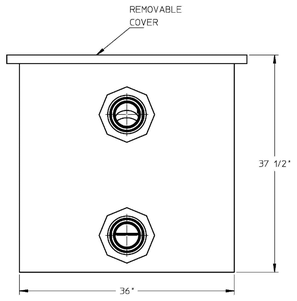
REFERENCE VIEW
(COVER REMOVED FOR CLARITY)



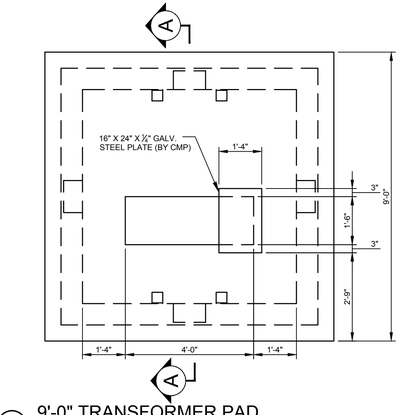
COVER REMOVED FOR CLARITY



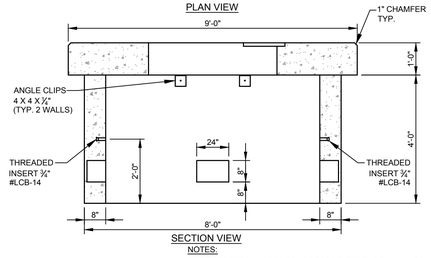
SECTION A-A



(A) FABCO DOWNSPOUT FILTER UNIT DETAIL
N.T.S.



(B) 9'-0" TRANSFORMER PAD
N.T.S.



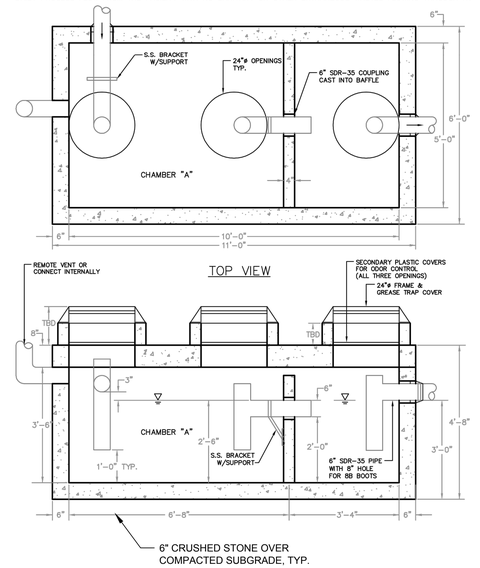
SECTION VIEW

NOTES:
1. CONCRETE MINIMUM COMPRESSIVE STRENGTH 4,000 PSI @ 28 DAYS WITH STEEL REINFORCEMENT.
2. AS PER CENTRAL MAINE POWER COMPANY SPECIFICATIONS.
3. ONE 8" x 24" KNOCKOUT PROVIDED EACH WALL.
4. FOR 750 - 5000 KVA THREE PHASE TRANSFORMER.
5. FINISH GRADE SHALL BE GRADED TO ALLOW SURFACE WATER TO FLOW AWAY FROM THE PAD.

DESIGN NOTES:
1. CONCRETE 5000 PSI AT 28 DAYS.
2. H-20 LOADING
3. JOINTS SEALED WITH BUTYL RUBBER JOINT SEALANT (ASSHTO M-19)
4. ALL TEES/BAFFLES PROVIDED BY PRECAST.

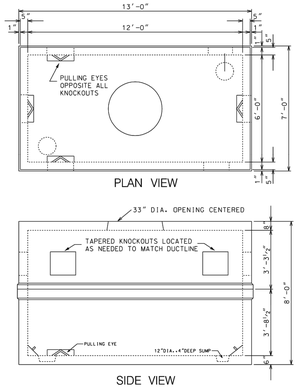
THIS STRUCTURE MUST DISCHARGE TO A CITY OF PORTLAND STANDARD MANHOLE WITH CHANNEL (CONTROL/SAMPLING MANHOLE).

FORMULA FOR SIZING THE TRAP: CHAMBER "A" (2/3 OF TANK VOLUME) MUST BE EQUIVALENT TO THE AVERAGE DAILY PROCESS FLOW FROM THE FACILITY WITH NO SANITARY OR OTHER EXTRANEOUS WASTES FLOWING THROUGH IT.

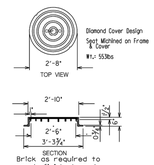


(C) GREASE TRAP (TO FUNCTION AS OIL / WATER SEPARATOR FOR GARAGE DRAINS)
N.T.S.

AS OBTAINED FROM THE CITY OF PORTLAND "TECHNICAL MANUAL"



MANHOLE DETAIL
N.T.S.
(Ref.Type 38Y)



COVER DETAIL
N.T.S.

NOTES
1) Vault shall be designed to withstand H20 wheel loading with 6 inches of overburden. The design shall also meet the AASHTO design requirements of National Electrical Safety Code Section 3234. Provide shop drawings stamped by a State of Maine Registered Professional Engineer upon Request
2) Joints sealed with asphalt.
3) Mountings for cable racks etc. cast in wall by further plans or field located.
4) Manhole shall be set on a suitable gravel base.
5) Cables are to be racked along one wall only.

(D) CMP PRECAST CONCRETE 38Y MANHOLE
N.T.S.

Stantec
482 Payne Road Scarborough Court
Scarborough, Maine 04074-8929
Tel. 207.883.3355
www.stantec.com

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Consultants
ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
ALA
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

OWNER:
100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

Revision	By	Appd.	YY.MM.DD
7 FINAL PLAN SUBMISSION TO CITY	SRB	SRB	18.12.17
6 LEVEL III RESUBMISSION TO CITY	SRB	SRB	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.11.09
3 LEVEL III RESUBMISSION TO CITY	SRB	SRB	18.10.09
2 PROGRESS SET	SRB	SRB	18.09.24
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 210801622_det	P&F	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHK'D.	DSGN:	DATE

Permit-Seal

STATE OF MAINE
STEPHEN R. BUSHEY
12-17-18
LICENSED PROFESSIONAL ENGINEER

Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
MISCELLANEOUS UTILITY DETAILS

Project No. 210801622
Scale N.T.S.

Sheet
C-6.3

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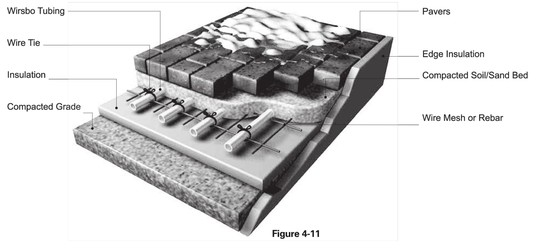


Figure 4-11

Pavers Over a Compactable Soil/Sand Bed

Application

This method is for designs with light vertical load requirements. With insulation, the heated area is isolated from high movement of energy from the system to the surrounding frozen soil. Response time is fairly quick and even faster if the system is idled.

Where Used

This installation is applicable to the following applications.

- Sidewalks
- Driveways
- Low-density roads

How to Install

There are two ways to install the tubing over the high-density insulation. As shown in **Figure 4-11**, secure the tubing to the wire mesh or rebar which has been placed over the high-density insulation board. In the alternative method, secure the tubing to the high-density insulation using Wirsbo plastic staples with the manual stapler.

Install vertical insulation along the entire edge down to the depth of the horizontal insulation. The insulation creates a thermal break between the heated area and the frozen ground.

After installing the tubing, cover with a compactable soil/sand bed (typically 2 to 3 inches) prior to applying pavers or bricks.

What to Look For

- Make sure the base material is properly compacted as specified by the project engineer.
- Verify whether a high water table or moist soil conditions exist within 8 to 10 vertical feet of the snow and ice melting system. If found, isolate the system from the moisture.
- Using approved insulation with vertical compressive strength is critical. Consult with the insulation manufacturer or project engineer for recommendations.
- Supply water temperatures for this application should be no higher than 150°F.

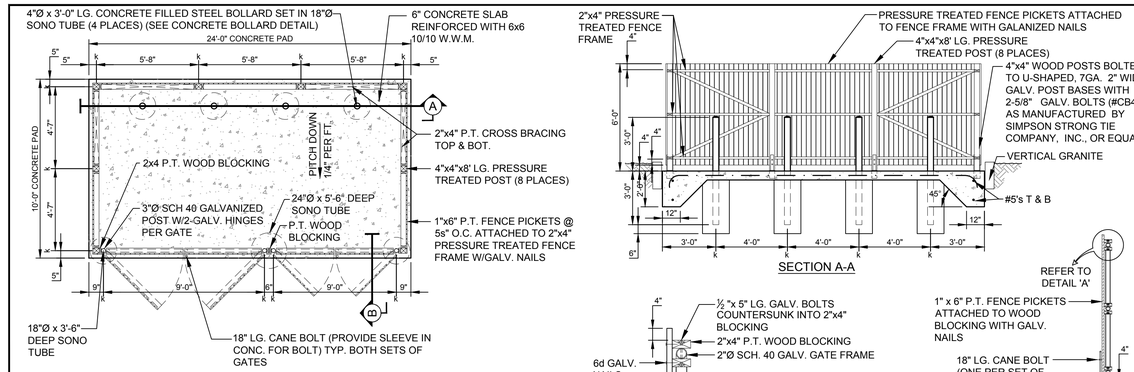
Control Strategy

Use the semi- or fully automatic strategy for this installation method.

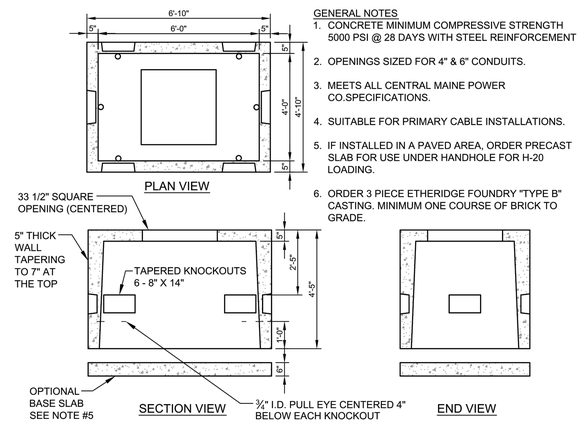
NOTE:

SNOWMELT SYSTEM INSTALLATION TO BE COORDINATED WITH MEP PLANS AND CITY OF PORTLAND PUBLIC WORKS (WHEN SYSTEM IS IN THE R.O.W.).

Ⓐ SNOWMELT PAVER DETAIL (LOCATIONS T.B.D.)
N.T.S.



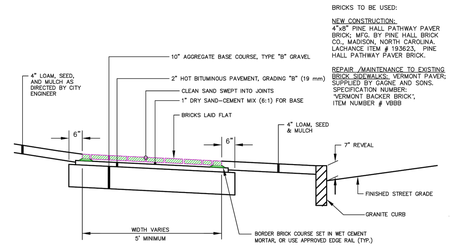
Ⓒ 24'x10' DUMPSTER ENCLOSURE PLAN AND DETAILS
N.T.S.



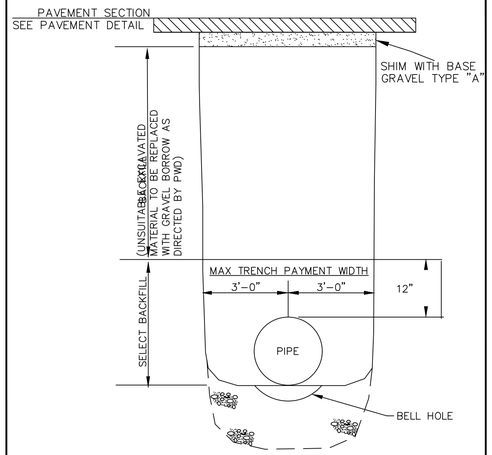
GENERAL NOTES

1. CONCRETE MINIMUM COMPRESSIVE STRENGTH 5000 PSI @ 28 DAYS WITH STEEL REINFORCEMENT
2. OPENINGS SIZED FOR 4" & 6" CONDUITS.
3. MEETS ALL CENTRAL MAINE POWER CO.SPECIFICATIONS.
4. SUITABLE FOR PRIMARY CABLE INSTALLATIONS.
5. IF INSTALLED IN A PAVED AREA, ORDER PRECAST SLAB FOR USE UNDER HANDHOLE FOR H-20 LOADING.
6. ORDER 3 PIECE ETHERIDGE FOUNDRY "TYPE B" CASTING. MINIMUM ONE COURSE OF BRICK TO GRADE.

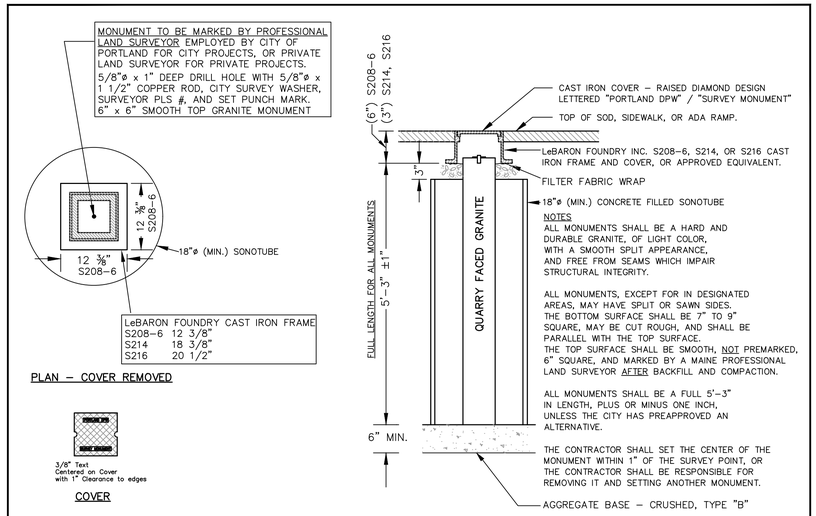
Ⓓ SPLICE BOX DETAIL
N.T.S.



Ⓕ BRICK SIDEWALK WITH BUTUMINOUS BASE DETAIL
N.T.S.



Ⓑ TYPICAL WATER TRENCH DETAIL
N.T.S.



Ⓔ GRANITE STREET MONUMENT DETAIL
N.T.S.

Ⓖ
N.T.S.

Stantec
482 Payne Road Scarborough Court
Scarborough, Maine 04074-8929
Tel. 207.883.3355
www.stantec.com

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Consultants

ARCHITECT
ARCHETYPE

LANDSCAPE ARCHITECT
ALA

SURVEYOR
OWEN HASKELL

CONTRACTOR
CIANBRO

Notes

OWNER:
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WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

Revision	By	Appd.	Date
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3 LEVEL III SUBMISSION TO CITY	SRB		18.11.09
2 PROGRESS SET	SRB		18.10.09
1 INTERNAL REVIEW	SRB		18.09.24

File Name: 210801622_det | P.E. STEPHEN R. BUSHEY | PBF DWN. | DBS CHK'D. | SRB DSGN. | 18.09.14 DATE

Permit-Seal



Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
MISCELLANEOUS DETAILS

Project No. 210801622
Scale N.T.S.

Sheet
C-6.4

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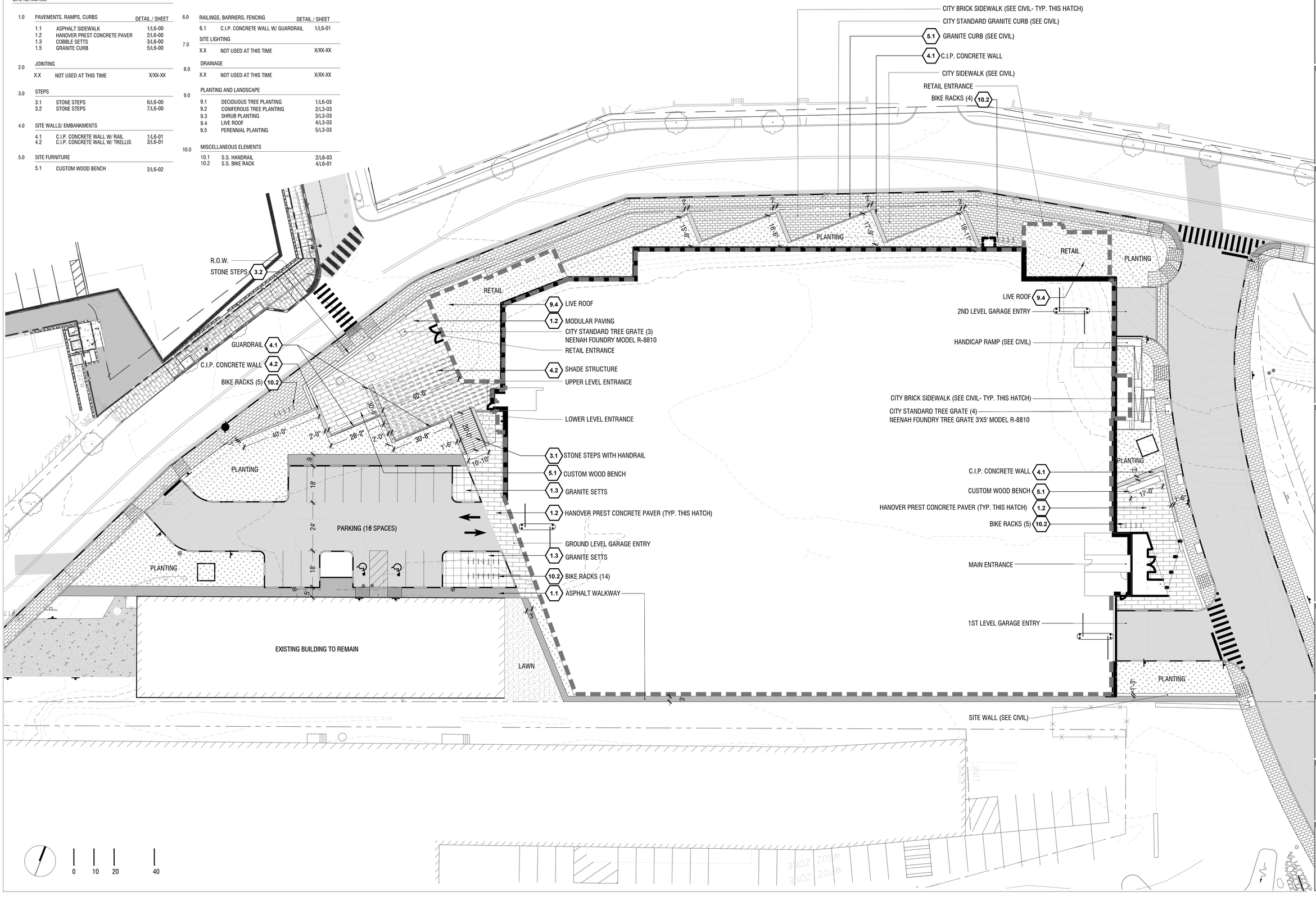
SITE KEYNOTES:

			DETAIL / SHEET
1.0	PAVEMENTS, RAMPS, CURBS		
	1.1	ASPHALT SIDEWALK	1/L6-00
	1.2	HANOVER PREST CONCRETE PAVER	2/L6-00
	1.3	COBBLE SETTS	3/L6-00
	1.5	GRANITE CURB	5/L6-00
2.0	JOINTING		
	X.X	NOT USED AT THIS TIME	X/XX-XX
3.0	STEPS		
	3.1	STONE STEPS	6/L6-00
	3.2	STONE STEPS	7/L6-00
4.0	SITE WALLS/ EMBANKMENTS		
	4.1	C.I.P. CONCRETE WALL W/ RAIL	1/L6-01
	4.2	C.I.P. CONCRETE WALL W/ TRELLIS	3/L6-01
5.0	SITE FURNITURE		
	5.1	CUSTOM WOOD BENCH	2/L6-02
6.0	RAILINGS, BARRIERS, FENCING		DETAIL / SHEET
	6.1	C.I.P. CONCRETE WALL W/ GUARDRAIL	1/L6-01
7.0	SITE LIGHTING		
	X.X	NOT USED AT THIS TIME	X/XX-XX
8.0	DRAINAGE		
	X.X	NOT USED AT THIS TIME	X/XX-XX
9.0	PLANTING AND LANDSCAPE		
	9.1	DECIDUOUS TREE PLANTING	1/L6-03
	9.2	CONIFEROUS TREE PLANTING	2/L3-03
	9.3	SHRUB PLANTING	3/L3-03
	9.4	LIVE ROOF	4/L3-03
	9.5	PERENNIAL PLANTING	5/L3-03
10.0	MISCELLANEOUS ELEMENTS		
	10.1	S.S. HANDRAIL	2/L6-03
	10.2	S.S. BIKE RACK	4/L6-01



ACETO LANDSCAPE ARCHITECTS
970.279.5344 | ACETOLA.COM

SEAL

PROJECT TITLE

100 FORE STREET

100 FORE STREET
PORTLAND, ME

PREPARED FOR

REVISIONS DATE

ISSUE DATE

LEVEL III SUBMISSION
TO CITY
DECEMBER 14, 2018

SHEET TITLE

PLANTING PLAN

SHEET INFORMATION

L 1-01

NOT FOR CONSTRUCTION

PLANT LIST - TREES

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	SPACING
6	GT	*Gleditsia Triacanthos 'Draves'*	*Street-Keeper* Honeylocust	3" CAL.	B&B	PER PLAN
8	AF	*Acer x Freemanii 'Armstrong'*	*Armstrong* Red Maple	3" CAL.	B&B	PER PLAN
7	UA	*Ulmus Americana 'Princeton'*	Princeton Elm	3" CAL.	B&B	PER PLAN
27	BP	*Betula papyrifera 'Renaissance Reflection'*	White Paper Birch (multistem)	8-10'	B&B, Multistem	PER PLAN
8	AC	*Amelancher Canadensis*	Serviceberry	8-10'	B&B	PER PLAN
9	VM	*Vibernum Lanterna 'Mohican'*	Mohican Vibernum	3.5-4'	B&B	PER PLAN

PLANT LIST - PERRENNIALS AND GRASSES

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	SPACING
-	HF	*Dennstaedita Punctilobula*	Hayscented Fern	-	710 SF SOD	PER PLAN
-		*TBD*	TBD	-	7,900 SF	PER PLAN

ALL OFFSITE DESIGN AND COSTS FOR CONNECTION OF DRIVE AND SIDEWALKS TO THAMES STREET EXTENSION ARE SUBJECT TO COORDINATION WITH CITY AND 58 FORE STREET DEVELOPER

FUTURE 8' WIDE BRICK SIDEWALK ON EAST SIDE OF CONNECTOR ROAD (BY OTHERS TO ALLOW FOR 58 FORE ST. DEVELOPMENT

PROSPECTIVE LAND TRANSFER TO OTHERS

MODULAR BLOCK RETAINING WALL (DESIGNED BY CONTRACTOR)

58 FORE STREET SITE

TM 18-A-1 N/F CPB2 LLC 31425/267

FUTURE THAMES STREET EXTENSION (BY OTHERS)

TM 19-A-2 N/F CITY OF PORTLAND 1951/341

TM 19-A-13 N/F JACKRABBIT LIMITED LIABILITY COMPANY 12434/163

TM 19-A-8 N/F JACKRABBIT LIMITED LIABILITY COMPANY 28485/242

TM 19 BLOCK A LOT 14 N/F CITY OF PORTLAND

TENANT – VETERAN'S ADMINISTRATION

TM 19 BLOCK A LOT 8 N/F JACKRABBIT LIMITED LIABILITY COMPANY 21919/161 28485/242

N/F CITY OF PORTLAND TM 19-A-14

E:2931952.355 N:301973.582

E:2931781.307 N:302142.198

E:2931270.656 N:301679.516

N:301702.29 E:2931596.89

JERSEY BARRIERS

STOCKADE FENCE

DUMPSTER AREA

3' WIDE BIT. ASPHALT SIDEWALK

5' WIDE BIT. ASPHALT SIDEWALK(TYP)

EXISTING BUILDING TO REMAIN (SEE ARCHITECTURAL PLANS FOR INTERIOR RENOVATIONS AND RECONFIGURATION OF BUILDING ENTRANCES) (PROPOSED USE - PRIVATE FITNESS CENTER)

BUILDING FREE 2.08'

APPROXIMATE LOCATION OF PWD WATER SERVICE CARD 8/3/76 4" DOM. 8" FIRE

METAL STEPS w/BOLLARDS

8' LOADING DOCK FFE= 17.15

SPRINKLER

FFE= 16.62

CONCRETE

PROPOSED 539 SPACE PARKING GARAGE (3 LEVELS) & UPPER LEVEL OFFICE BUILDING (2 LEVELS)
TOTAL GLA= 82,872± SF
TOTAL OFFICE GLA= _____ SF (EXCLUDING RETAIL)
64,974 SF FOOTPRINT

LOT AREA = 129,212 S.F. 2.97 ACRES

BIKE RACKS (P0 LEVEL= 5; P1 LEVEL= 10; P2 LEVEL= 10)

1ST LEVEL ENTRY/EXIT

FLUSH GRANITE STEPS, TYP (SEE LANDSCAPE PLANS)

SEE ARCHITECTURAL PLANS FOR MAIN ENTRY DETAILS

4"x4" GRANITE SETS (TYP)

BIKE RACKS SEE LANDSCAPE DETAILS (14 TOTAL)

GROUND LEVEL ENTRY/EXIT

GATE SYSTEM (BY OTHERS)

GRANITE STAIRS (DESIGN BY OTHERS)

BENCH (SEE LANDSCAPE PLANS

RETAINING WALL

5' PEDESTRIAN ACCESS INTO BUILDING AT LEVEL 1 DECK

4' WIDE CIP CONCRETE SIDEWALK/RAMP SYSTEM WITH STAINLESS STEEL HANDRAIL SYSTEM (SHOP DRAWINGS REQUIRED)

24' WIDE ENTRY / EXIT TO LEVEL 2 PARKING DECK

GATE SYSTEM (BY OTHERS)

GROUND LEVEL RETAIL STORE FRONT - SUBJECT TO DIMENSIONAL REFINEMENT BASED ON PROPOSED PLAZA DESIGN AND TENANT INPUT

RETAIL 1,328 SF FFE: 28'

RETAIL 2,294 SF FFE: 25'

STAIRS

ELEV.

ELEC. ROOM

TRASH

BP/5

BP/17

AF/8

AC/4

GT/4

UA/7

VM/9

GT/2

DRIVEWAY #1 ENTRY TO GROUND LEVEL PARKING

GRANITE STEPS (TYP)

FUTURE SHIPYARD REDEVELOPMENT (BY OTHERS)

3 PHASE

ZONE B6 ZONE IS-FBC

WPDZ WSUZ

FORE STREET
PAVED – PUBLIC VARIABLE WIDTH

MOUNTFORT STREET PAVED – PUBLIC VARIABLE WIDTH

BM: BONNET BOLT HYDRANT PSI-101 ELEV.=30.68

HYDRANT PSI=103

HYDRANT PSI=105

EXISTING OVERHEAD LINES TO REMAIN

APPROXIMATE SAWCUT LIMITS - ALL ACTIVITY WITHIN CITY ROW TO BE IN ACCORDADNCE WITH CITY REGULATIONS

DRILL HOLE FOUND

CONC. RETAINING WALL

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 inch = 30 ft.

1. PLANTING OF TREES AND SHRUBS SHALL NOT OCCUR UNTIL ALL GRADING AND PAVING IS COMPLETED IN THE AREA.
2. ALL PLANTS SHALL HAVE A NORMAL HABIT OF GROWTH FOR THE SPECIES AND SHALL BE SOUND, HEALTHY AND FREE OF DISEASE AND INSECTS. THEY SHALL CONFORM TO THE SIZE SPECIFICATION INDICATED ON THE PLANT LIST AND SHALL CONFORM TO ANSI Z60.1 - NURSERY STOCK, LATEST REVISION.
3. ALL PLANTS SHALL HAVE ALL ROOTBALL WRAPPING MATERIALS (BURLAP, WIRE, STRING, ROPE, POTS, ETC.) REMOVED AT THE TIME OF PLANTING. REMOVE SOIL PLACED ABOVE ROOTS TO EXPOSE TRUNK FLARE AS NECESSARY TO DETERMINE SETTING LEVEL AND PIT DEPTH. CIRCLING ROOTS OR ROOTS THAT WOULD LATER GIRDLE THE PLANT SHALL BE STRAIGHTENED OR CUT OR THE ROOT BALL SHALL BE CUT UTILIZING THE "BUTTERFLY METHOD".
4. BACKFILL MIX FOR ALL PLANT MATERIAL, EXCEPT TREES, SHALL BE COMPOSED OF TWO PARTS EXISTING SOIL AMENDED WITH ONE PART COMPOST OR TOPSOIL, OR WITH ONE PART SANDY FILL IF HEAVY SOILS. TREE PITS SHALL BE BACKFILLED WITH EXISTING SOIL. PLANTING PITS SHALL BE EXCAVATED TO TWICE THE DIAMETER AND TO THE SAME DEPTH OF THE PLANT ROOT BALL. BACKFILL 1/2 OF DEPTH OF PIT AT A TIME AND COMPACT. REFER TO FERTILIZER RATES AND INSTALL SLOW RELEASE FERTILIZER AFTER FIRST BACKFILL LIFT.
5. ALL PLANTINGS SHALL HAVE SLOW RELEASE FERTILIZER TABLETS INSTALLED. TABLETS SHALL BE AGRIFORM 21-GRAM 20-10-5 PLANTING TABLETS OR AN APPROVED EQUAL. APPLICATION RATE: PERENNIALS - 1 TABLET/PLANT, WOODY SHRUBS TO 3'-0" - 2 TABLETS/PLANT, SHRUBS AND TREES 3'-0" TO 6'-0"-3 TABLETS/PLANT AND TREES 6'-0" AND ABOVE - 4 TABLETS/PLANT. AFTER PLANTS ARE INSTALLED, LIQUID FEED ALL PLANTS WITH ROOTS OR AN APPROVED EQUAL. MIX ACCORDING TO MANUFACTURERS INSTRUCTIONS. APPLICATION RATE: PERENNIALS - 2 QT/PLANT, WOODY SHRUBS TO 4'-0" - 1.5 GAL/PLANT, TREES AND SHRUBS 4'-0" TO 10'-0" 3.0 GAL/PLANT AND TREES 10' AND ABOVE - 4.0 GAL/PLANT.
6. ALL TREES REQUIRE A MINIMUM OF 2 STAKES EACH AND ALL SHALL BE GUYED OR STAKED. TREE STAKING MATERIAL SHALL BE REMOVED BY THE LANDSCAPE CONTRACTOR AFTER ONE GROWING SEASON.
7. ALL SHRUB PLANTINGS ARE IN MULCHED BEDS. ALL PLANTING BEDS SHALL BE FREE OF WEEDS OR GRASS PRIOR TO INSTALLATION OF MULCH. IF VEGETATION EXISTS, TREAT WITH HERBICIDE. MULCH SHALL BE MEDIUM SHREDDED BARK, 3" DEPTH. ALL PLANTINGS NOT IN BEDS OR ISLANDS SHALL HAVE MULCHED WATER RINGS ACCORDING TO THE DETAILS.
8. ALL PLANTS SHALL HAVE THEIR LOCATIONS STAKED AND THEN APPROVED BY THE LANDSCAPE ARCHITECT OR OWNER PRIOR TO PLANT INSTALLATION. ALL PLANTS SHALL BE ORIENTED FOR BEST APPEARANCE. TREE LOCATIONS SHALL BE ADJUSTED TO AVOID FUTURE CONFLICT WITH OVERHEAD UTILITY LINES OR OTHER OBSTRUCTIONS.
9. PLANT SPECIES SUBSTITUTIONS WILL NOT BE ALLOWED UNLESS FIRST APPROVED BY THE LANDSCAPE ARCHITECT, OWNER, AND CITY OF PORTLAND. ANY CHANGE TO PLANT SPECIES, DUE TO LACK OF AVAILABILITY DURING CONSTRUCTION, SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT.
10. ALL DISTURBED AREAS NOT IDENTIFIED WITH OTHER SURFACE TREATMENTS SHALL BE GRASSED. THE GRASSED AREAS SHALL BE LOAMED, SEEDED AND MULCHED WITH SEED MIXES AS NOTED:
    11. PRIOR TO SEEDING, APPLY FERTILIZER AND LIME IN ACCORDANCE WITH SOIL TEST RECOMMENDATIONS.
    12. LAWN AREAS: 35% TALL FESCUE, 30% CREEPING RED FESCUE, 20% PERENNIAL RYEGRASS, 15% ANNUAL RYEGRASS
    13. RATE: 5 LBS/1000 SF.
    14. VEGETATED UNDERDRAINED SOIL FILTER :20 LBS / ACRE CREEPING RED FESCUE, 20 LBS / ACRE TALL FESCUE, 8 LBS / ACRE BIRDS FOOT TREFOIL.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LAWN MAINTENANCE. MAINTENANCE SHALL COMMENCE AT THE TIME OF PLANTING AND CONTINUE UNTIL GRASS IS FULL AND ESTABLISHED AND ACCEPTED BY THE OWNER.
16. ALL PLANTS SHALL BE GUARANTEED FOR ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY THE OWNER. ANY PLANTS THAT DIE DURING THE GUARANTEE PERIOD SHALL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER. A WRITTEN WARRANTY, WITH CONTRACTOR'S CONTACT INFORMATION, DATE OF ACCEPTANCE AND LENGTH OF GUARANTEE PERIOD SHALL BE SUBMITTED AS PART OF JOB CLOSEOUT.

PRELIMINARY - NOT FOR CONSTRUCTION

V:\210801622\civil\cadd\permit\dwg\01622_landscape.dwg pfillettaz 1/4/2019 4:00 P.M.

Stantec
482 Payne Road Scarborough Court
Scarborough, Maine 04074-8929
Tel. 207.883.3355
www.stantec.com

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Consultants

ARCHITECT
ARCHETYPE

LANDSCAPE ARCHITECT
ALA

SURVEYOR
OWEN HASKELL

CONTRACTOR
CIANBRO

Notes

OWNER:
100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

Revision	By	Appd.	YY.MM.DD
1. INTERNAL REVIEW	SRB	SRB	19.01.04
2. PROGRESS SET	SRB	SRB	18.12.17
3. LEVEL III SUBMISSION TO CITY	SRB	SRB	18.11.30
4. LEVEL III RESUBMISSION TO CITY	SRB	SRB	18.11.14
5. PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.09
6. LEVEL III RESUBMISSION TO CITY	SRB	SRB	18.10.09
7. FINAL PLAN SUBMISSION TO CITY	SRB	SRB	18.09.24
8. ISSUED LOR #2	SRB	SRB	18.09.14

File Name: 195350450_SP	P&F	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal

STATE OF MAINE
STEPHEN R. BUSHEY
01-04-19
LICENSED PROFESSIONAL ENGINEER

Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

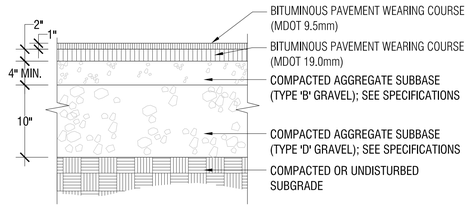
Title
LANDSCAPE PLAN

Project No. 210801622
Scale 1" = 30'

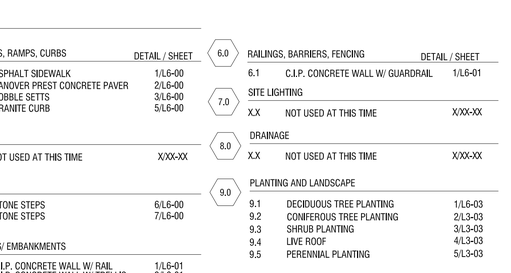
Sheet
L-1.0

SITE KEYNOTES:

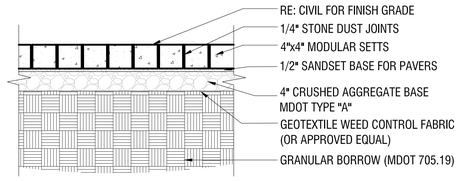
1.0	PAVEMENTS, RAMPS, CURBS	DETAIL / SHEET	6.0	RAILINGS, BARRIERS, FENCING	DETAIL / SHEET
1.1	ASPHALT SIDEWALK	1/L6-00	6.1	C.I.P. CONCRETE WALL W/ GUARDRAIL	1/L6-01
1.2	HANOVER PREST CONCRETE PAVER	2/L6-00	7.0	SITE LIGHTING	
1.3	COBBLE SETTS	3/L6-00	X.X	NOT USED AT THIS TIME	X/XX-XX
1.5	GRANITE CURB	5/L6-00	8.0	DRAINAGE	
2.0	JOINTING		X.X	NOT USED AT THIS TIME	X/XX-XX
X.X	NOT USED AT THIS TIME	X/XX-XX	9.0	PLANTING AND LANDSCAPE	
3.0	STEPS		9.1	DECIDUOUS TREE PLANTING	1/L6-03
3.1	STONE STEPS	6/L6-00	9.2	CONIFEROUS TREE PLANTING	2/L3-03
3.2	STONE STEPS	7/L6-00	9.3	SHRUB PLANTING	3/L3-03
4.0	SITE WALLS/ EMBANKMENTS		9.4	LIVE ROOF	4/L3-03
4.1	C.I.P. CONCRETE WALL W/ RAIL	1/L6-01	9.5	PERENNIAL PLANTING	5/L3-03
4.2	C.I.P. CONCRETE WALL W/ TRELLIS	3/L6-01	10.0	MISCELLANEOUS ELEMENTS	
5.0	SITE FURNITURE		10.1	S.S. HANDRAIL	2/L6-03
5.1	CUSTOM WOOD BENCH	2/L6-02	10.2	S.S. BIKE RACK	4/L6-01



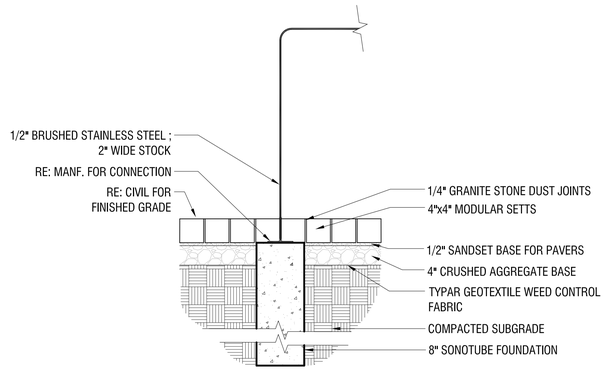
1 ASPHALT SIDEWALK 1.2
1":1'-0"



2 HANOVER PREST CONCRETE PAVER 1.3
1":1'-0"

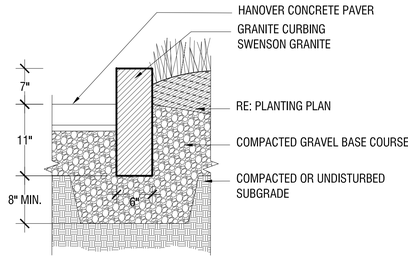


3 COBBLE SETTS 3.2
1":1'-0"

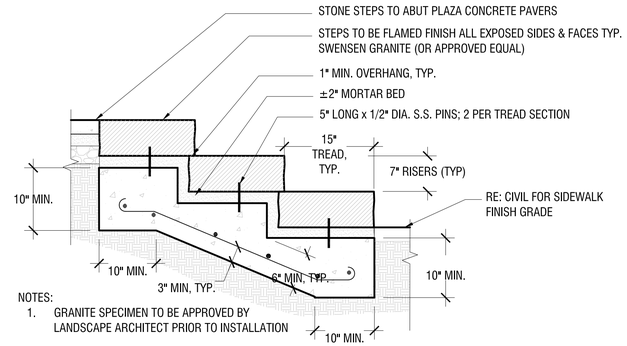


NOTES:
1. SONOTUBE FOOTING TO BE 4 FT. DEPTH OR BELOW FROST LINE, WHICHEVER IS GREATER

4 S.S. BIKE RACK 10.2
1":1'-0"

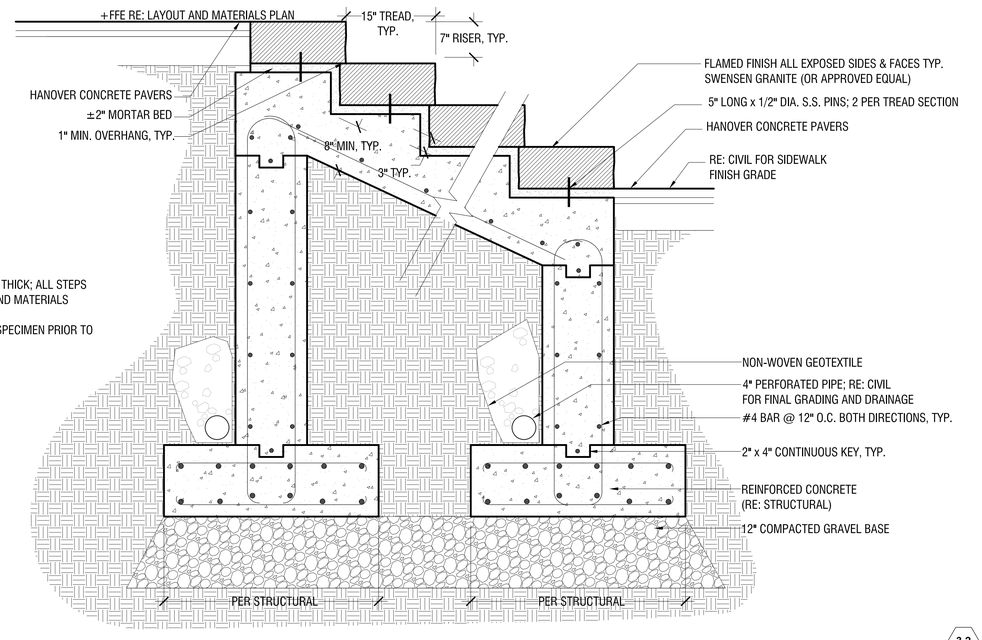


5 GRANITE CURB 1.5
1":1'-0"



NOTES:
1. GRANITE SPECIMEN TO BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION

6 STONE STEPS 3.1
1": 2'-0"



NOTES:
1. GRANITE PIECES TO BE 16" WIDE x 7" THICK; ALL STEPS SHALL BE ONE PIECE (SEE LAYOUT AND MATERIALS PLAN FOR LENGTHS)
2. LANDSCAPE ARCHITECT TO REVIEW SPECIMEN PRIOR TO INSTALLATION

7 STONE STEPS 3.2
1": 2'-0"

ACETO LANDSCAPE ARCHITECTS
970 279 5344 | ACETOLA.COM

SEAL

PROJECT TITLE

100 FORE STREET
100 FORE STREET
PORTLAND, ME

PREPARED FOR

REVISIONS | DATE

ISSUE DATE

LEVEL III SUBMISSION
TO CITY
DECEMBER 14, 2018

SHEET TITLE

SITE DETAILS

SHEET INFORMATION

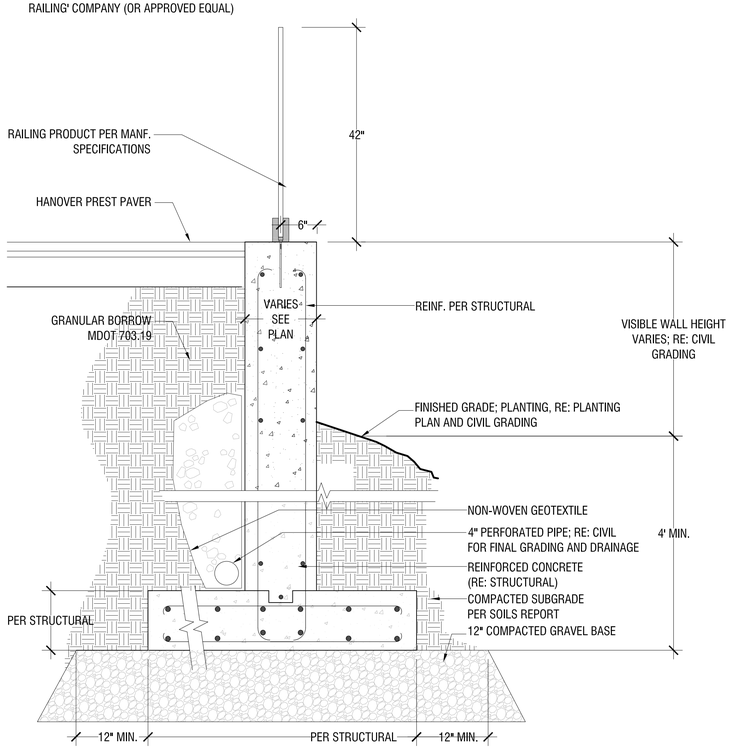
L 6-00

NOT FOR CONSTRUCTION

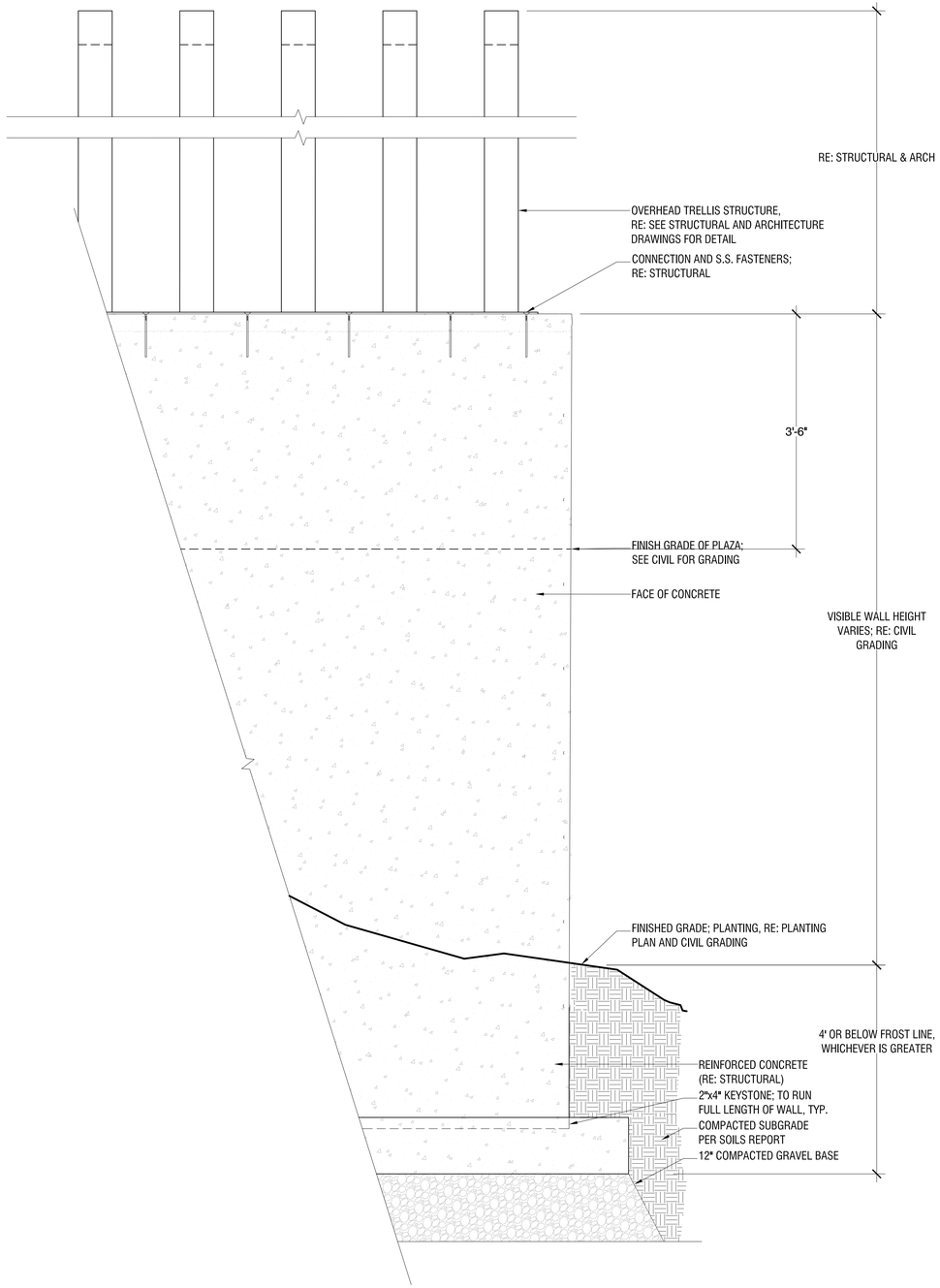
SITE KEYNOTES:

1.0	PAVEMENTS, RAMPS, CURBS	DETAIL / SHEET	6.0	RAILINGS, BARRIERS, FENCING	DETAIL / SHEET
1.1	ASPHALT SIDEWALK	1/L6-00	6.1	C.I.P. CONCRETE WALL W/ GUARDRAIL	1/L6-01
1.2	HANOVER PREST CONCRETE PAVER	2/L6-00	7.0	SITE LIGHTING	
1.3	COBBLE SETTS	3/L6-00	X.X	NOT USED AT THIS TIME	X/XX-XX
1.5	GRANITE CURB	5/L6-00	8.0	DRAINAGE	
2.0	JOINTING		X.X	NOT USED AT THIS TIME	X/XX-XX
X.X	NOT USED AT THIS TIME	X/XX-XX	9.0	PLANTING AND LANDSCAPE	
3.0	STEPS		9.1	DECIDUOUS TREE PLANTING	1/L6-03
3.1	STONE STEPS	6/L6-00	9.2	CONIFEROUS TREE PLANTING	2/L3-03
3.2	STONE STEPS	7/L6-00	9.3	SHRUB PLANTING	3/L3-03
4.0	SITE WALLS/ EMBANKMENTS		9.4	LIVE ROOF	4/L3-03
4.1	C.I.P. CONCRETE WALL W/ RAIL	1/L6-01	9.5	PERENNIAL PLANTING	5/L3-03
4.2	C.I.P. CONCRETE WALL W/ TRELLIS	3/L6-01	10.0	MISCELLANEOUS ELEMENTS	
5.0	SITE FURNITURE		10.1	S.S. HANDRAIL	2/L6-03
5.1	CUSTOM WOOD BENCH	2/L6-02	10.2	S.S. BIKE RACK	4/L6-01

NOTES:
1. GRAB RAIL IS TO BE @ 42" HT. FROM NOSE OF EACH TREAD; PARALLEL TO ANGLE OF STAIRS
2. GUARD RAIL AND GRAB/HAND RAIL USE MANF. 'SC&R: STAINLESS CABLE AND RAILING' COMPANY (OR APPROVED EQUAL)



1 C.I.P CONCRETE WALL W/ RAIL — 4.1
1":1'-0"



2 C.I.P. CONCRETE WALL W/ TRELLIS — 4.2
1":1'-0"

ACETO LANDSCAPE ARCHITECTS
970 279 5344 | ACETOLA.COM

SEAL

PROJECT TITLE
100 FORE STREET
100 FORE STREET
PORTLAND, ME

PREPARED FOR

REVISIONS DATE

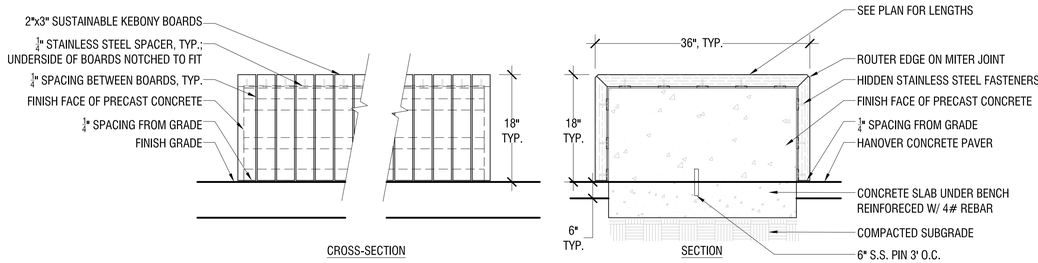
ISSUE DATE
LEVEL III SUBMISSION
TO CITY
DECEMBER 14, 2018

SHEET TITLE
DETAILS

SHEET INFORMATION
L 6-01
NOT FOR CONSTRUCTION

SITE KEYNOTES:

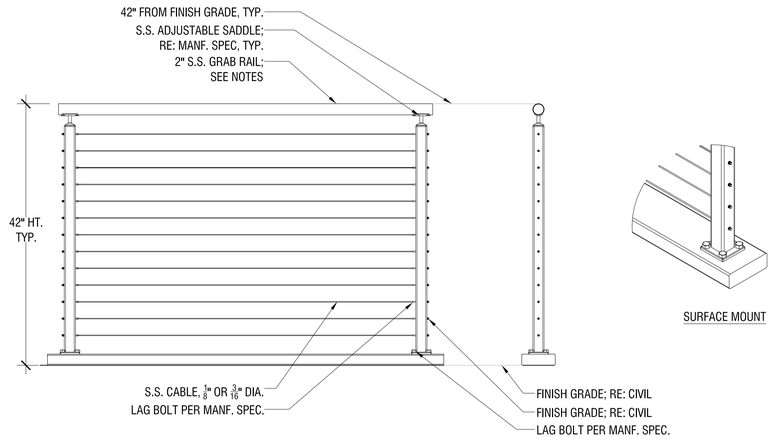
1.0	PAVEMENTS, RAMPS, CURBS	DETAIL / SHEET	6.0	RAILINGS, BARRIERS, FENCING	DETAIL / SHEET
1.1	ASPHALT SIDEWALK	1/L6-00	6.1	C.I.P. CONCRETE WALL W/ GUARDRAIL	1/L6-01
1.2	HANOVER PREST CONCRETE PAVER	2/L6-00	7.0	SITE LIGHTING	
1.3	COBBLE SETTS	3/L6-00	X.X	NOT USED AT THIS TIME	X/XX-XX
1.5	GRANITE CURB	5/L6-00	8.0	DRAINAGE	
2.0	JOINTING		X.X	NOT USED AT THIS TIME	X/XX-XX
X.X	NOT USED AT THIS TIME	X/XX-XX	9.0	PLANTING AND LANDSCAPE	
3.0	STEPS		9.1	DECIDUOUS TREE PLANTING	1/L6-03
3.1	STONE STEPS	6/L6-00	9.2	CONIFEROUS TREE PLANTING	2/L3-03
3.2	STONE STEPS	7/L6-00	9.3	SHRUB PLANTING	3/L3-03
4.0	SITE WALLS/ EMBANKMENTS		9.4	LIVE ROOF	4/L3-03
4.1	C.I.P. CONCRETE WALL W/ RAIL	1/L6-01	9.5	PERENNIAL PLANTING	5/L3-03
4.2	C.I.P. CONCRETE WALL W/ TRELLIS	3/L6-01	10.0	MISCELLANEOUS ELEMENTS	
5.0	SITE FURNITURE		10.1	S.S. HANDRAIL	2/L6-03
5.1	CUSTOM WOOD BENCH	2/L6-02	10.2	S.S. BIKE RACK	4/L6-01



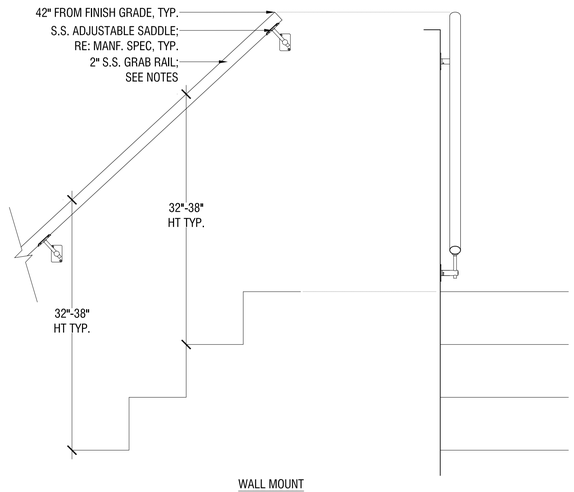
2 CUSTOM WOOD BENCH

1":1'-0"

5.1



SURFACE MOUNT



WALL MOUNT

NOTES:
1. GRAB RAIL IS TO BE @ 42" HT. FROM NOSE OF EACH TREAD; PARALLEL TO ANGLE OF STAIRS
2. GUARD RAIL AND GRAB/HAND RAIL USE MANF. 'SC&R: STAINLESS CABLE AND RAILING' COMPANY

1 S.S. HANDRAIL

1":1'-0"

10.1

ACETO LANDSCAPE ARCHITECTS
970 279 5344 | ACETOLA.COM

SEAL

PROJECT TITLE

100 FORE STREET

100 FORE STREET
PORTLAND, ME

PREPARED FOR

REVISIONS DATE

ISSUE DATE:

LEVEL III SUBMISSION
TO CITY
DECEMBER 14, 2018

SHEET TITLE:

DETAILS

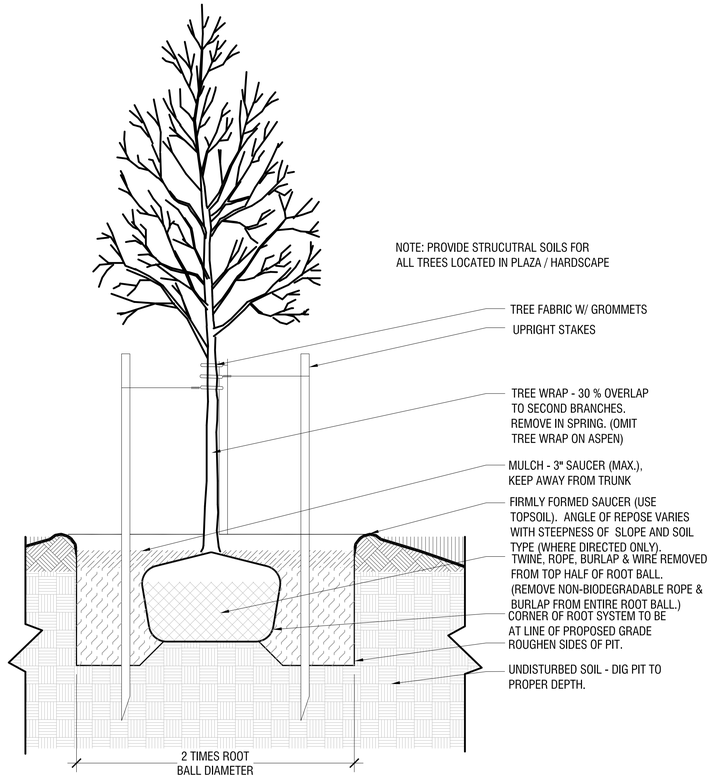
SHEET INFORMATION

L 6-02

NOT FOR CONSTRUCTION

SITE KEYNOTES:

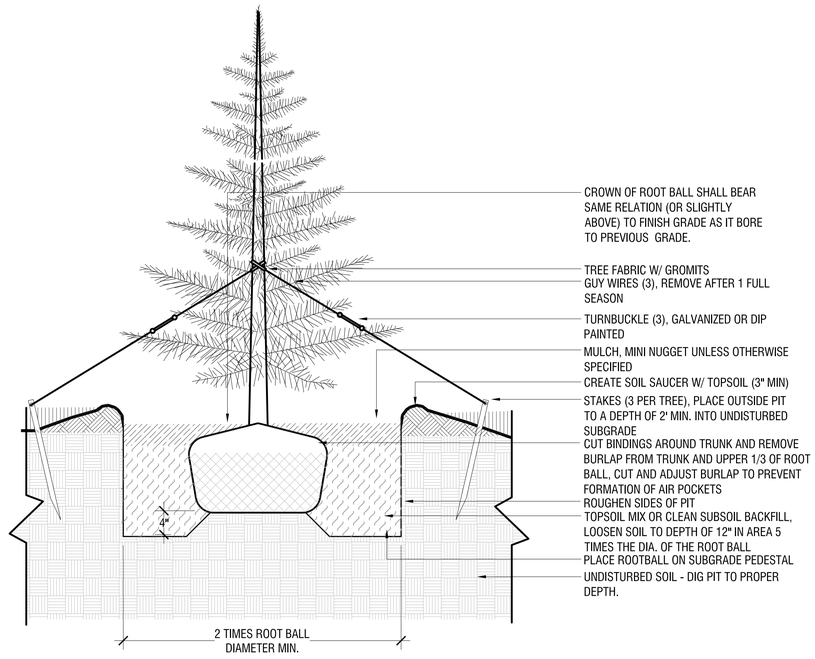
1.0	PAVEMENTS, RAMPS, CURBS		DETAIL / SHEET
	1.1	ASPHALT SIDEWALK	1/L6-00
	1.2	HANOVER PREST CONCRETE PAVER	2/L6-00
	1.3	COBBLE SETTS	3/L6-00
	1.5	GRANITE CURB	5/L6-00
2.0	JOINTING		
	X.X	NOT USED AT THIS TIME	X/XX-XX
3.0	STEPS		
	3.1	STONE STEPS	6/L6-00
	3.2	STONE STEPS	7/L6-00
4.0	SITE WALLS/ EMBANKMENTS		
	4.1	C.I.P. CONCRETE WALL W/ RAIL	1/L6-01
	4.2	C.I.P. CONCRETE WALL W/ TRELLIS	3/L6-01
5.0	SITE FURNITURE		
	5.1	CUSTOM WOOD BENCH	2/L6-02
6.0	RAILINGS, BARRIERS, FENCING		DETAIL / SHEET
	6.1	C.I.P. CONCRETE WALL W/ GUARDRAIL	1/L6-01
7.0	SITE LIGHTING		
	X.X	NOT USED AT THIS TIME	X/XX-XX
8.0	DRAINAGE		
	X.X	NOT USED AT THIS TIME	X/XX-XX
9.0	PLANTING AND LANDSCAPE		
	9.1	DECIDUOUS TREE PLANTING	1/L6-03
	9.2	CONIFEROUS TREE PLANTING	2/L3-03
	9.3	SHRUB PLANTING	3/L3-03
	9.4	LIVE ROOF	4/L3-03
	9.5	PERENNIAL PLANTING	5/L3-03
10.0	MISCELLANEOUS ELEMENTS		
	10.1	S.S. HANDRAIL	2/L6-03
	10.2	S.S. BIKE RACK	4/L6-01



1 DECIDUOUS TREE PLANTING

9.1

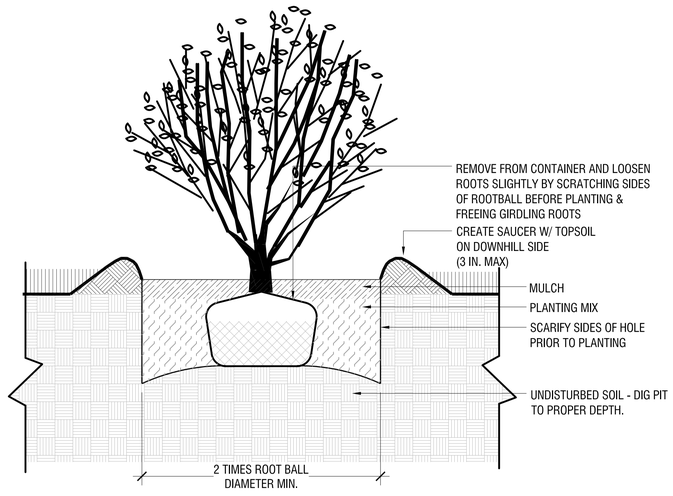
1":1'-0"



2 CONIFEROUS TREE PLANTING

9.2

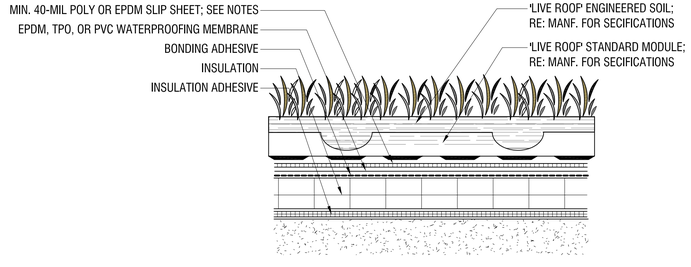
1":1'-0"



3 SHRUB PLANTING

9.3

1":1'-0"

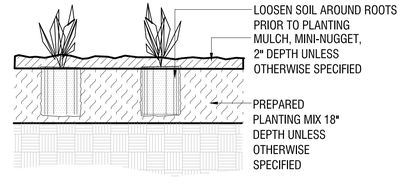


NOTES:
1. POLYPROPYLENE SHEET AND/OR EPDM SLIP SHEET EDGES SEAMED AND OVERLAPPED

4 LIVE ROOF

9.4

1":1'-0"



5 PERENNIAL PLANTING

9.5

1":1'-0"

ACETO LANDSCAPE ARCHITECTS
970.279.5344 | ACETOLA.COM

SEAL

PROJECT TITLE

100 FORE STREET
100 FORE STREET
PORTLAND, ME

PREPARED FOR

REVISIONS | DATE

ISSUE DATE:

LEVEL III SUBMISSION
TO CITY
DECEMBER 14, 2018

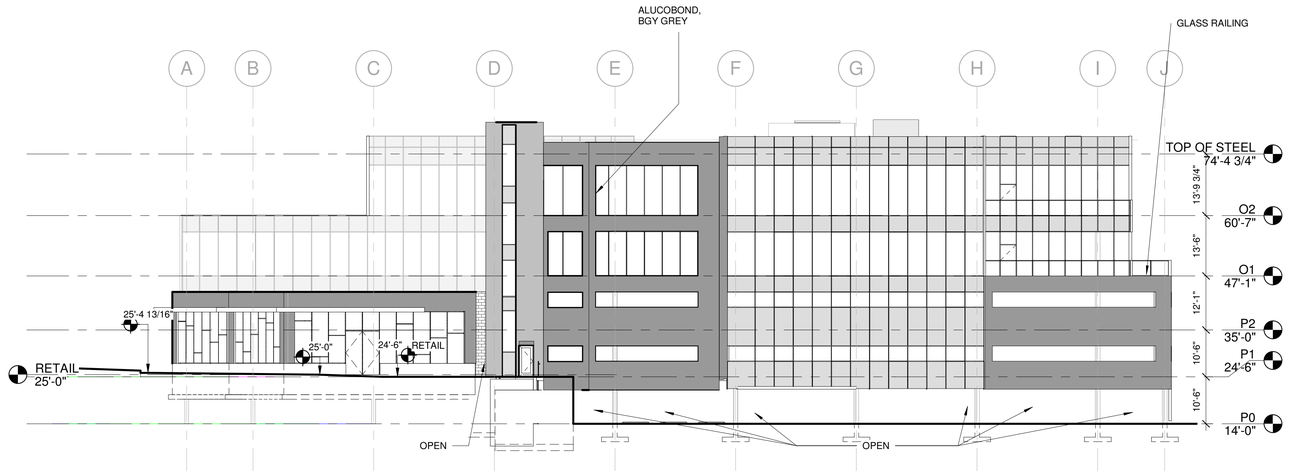
SHEET TITLE:

PLANTING DETAILS

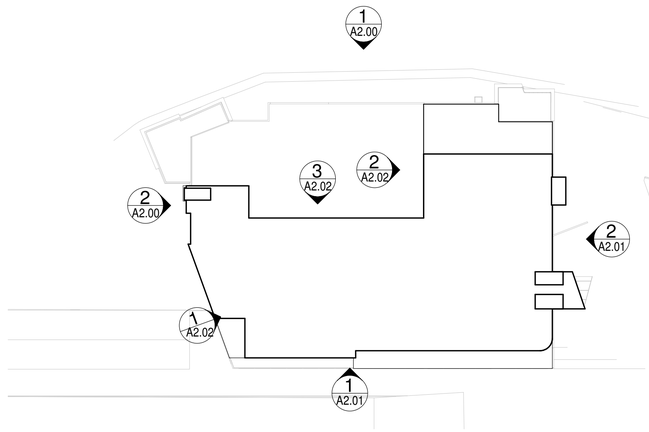
SHEET INFORMATION

L 6-03

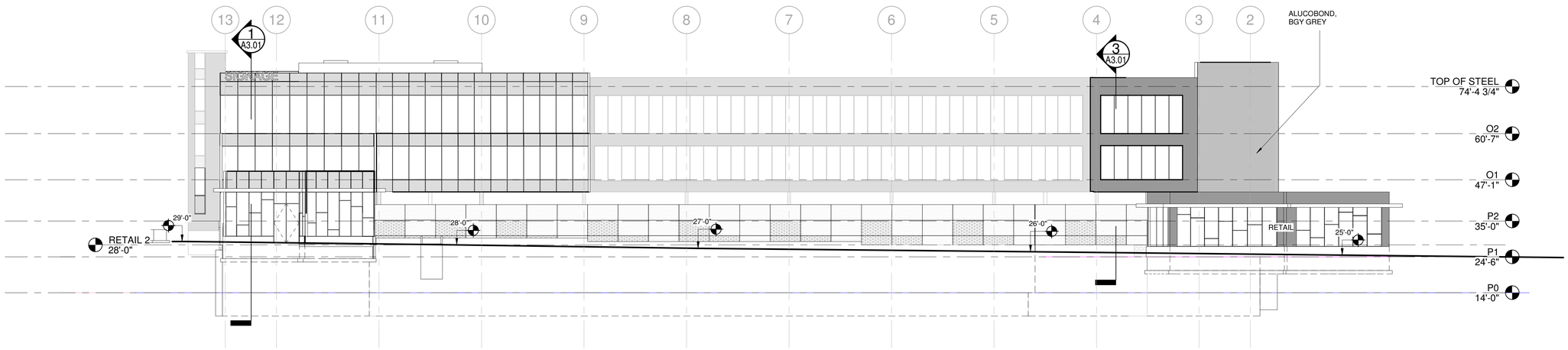
NOT FOR CONSTRUCTION



2 | WEST ELEVATION
1/16" = 1'-0"



3 | KEY PLAN
1" = 60'-0"



1 | NORTH ELEVATION
1/16" = 1'-0"

12/14/2018
12:47:19 PM

Architect:
ARCHETYPE ARCHITECTS
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Consultant:

Prepared For:

Project:
100 FORE STREET
Address
City, State

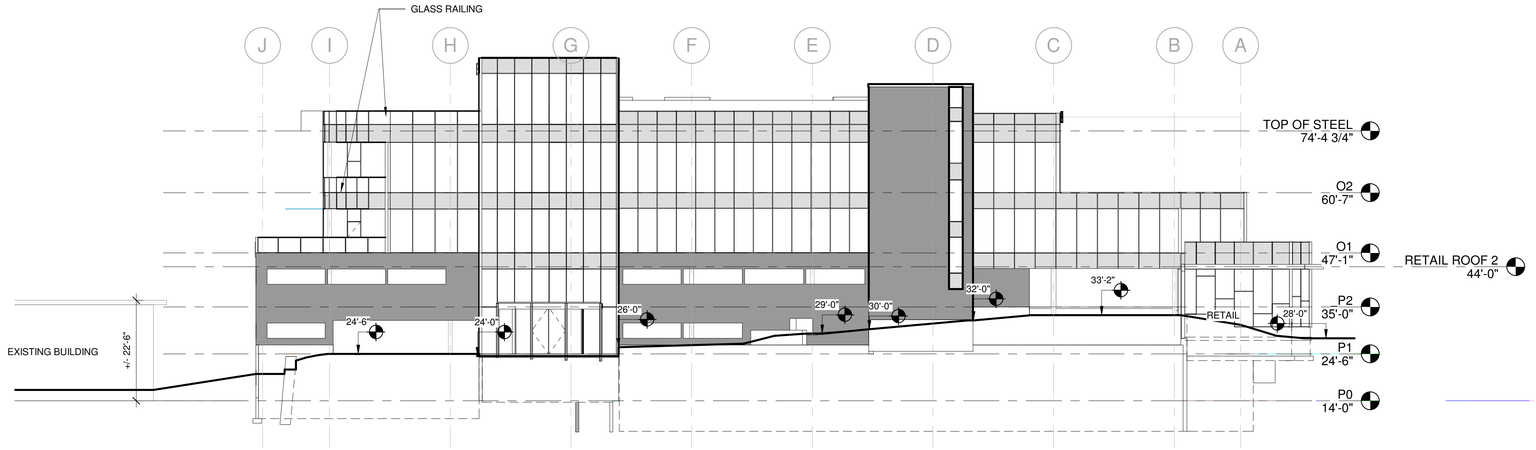
Revisions:
PROGRESS

Scale:
As indicated

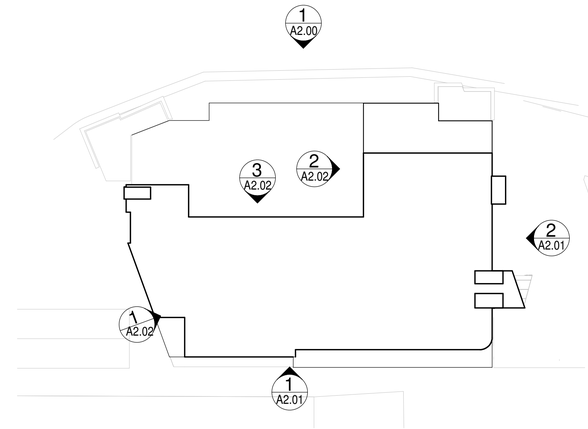
Date:
11-30-2018

BUILDING ELEVATIONS

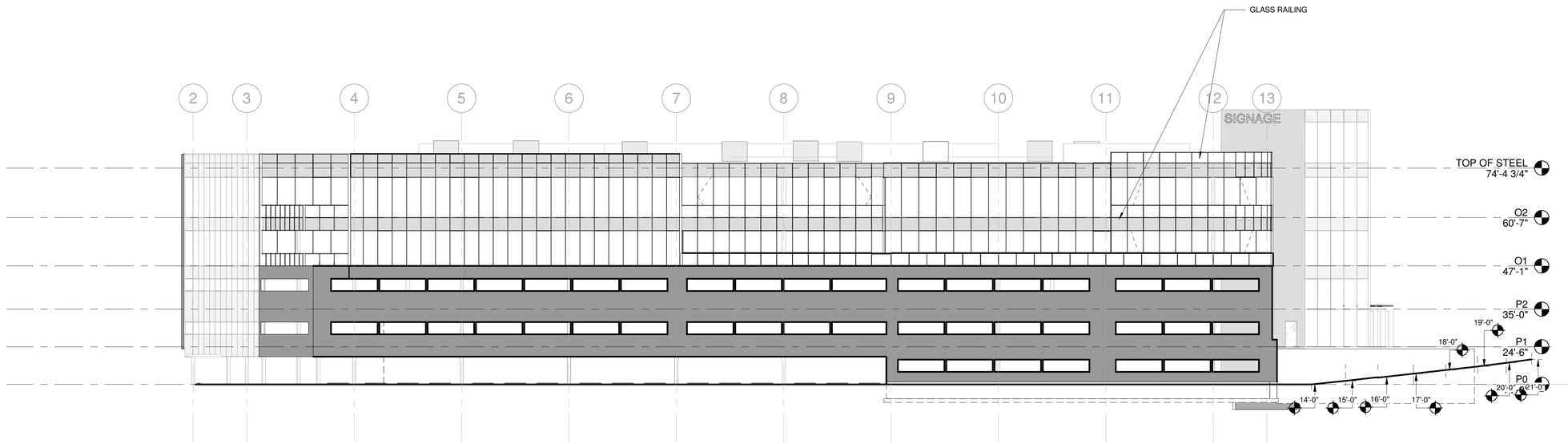
A2.00



2 | EAST ELEVATION
1/16" = 1'-0"



3 | KEY PLAN
1" = 60'-0"



1 | SOUTH ELEVATION
1/16" = 1'-0"

12/14/2018
12:47:40 PM

Architect:
ARCHETYPE ARCHITECTS
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Consultant:

Prepared For:
Address
City, State

Project:
100 FORE STREET
Address
City, State

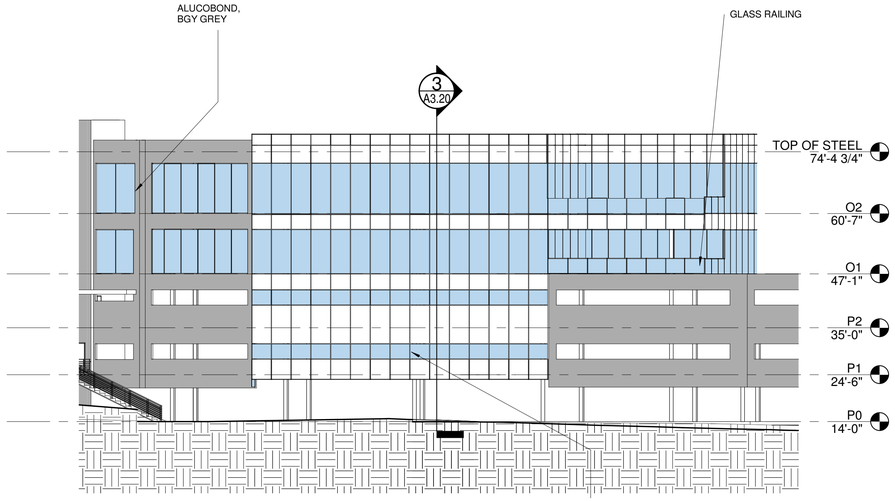
Revisions:
PROGRESS

Scale:
As indicated

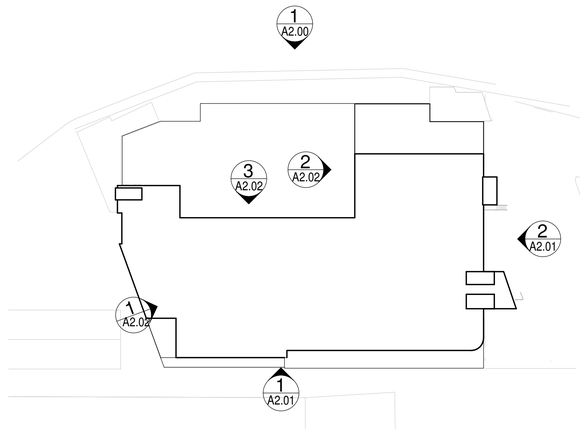
Date:
11-30-2018

BUILDING ELEVATIONS

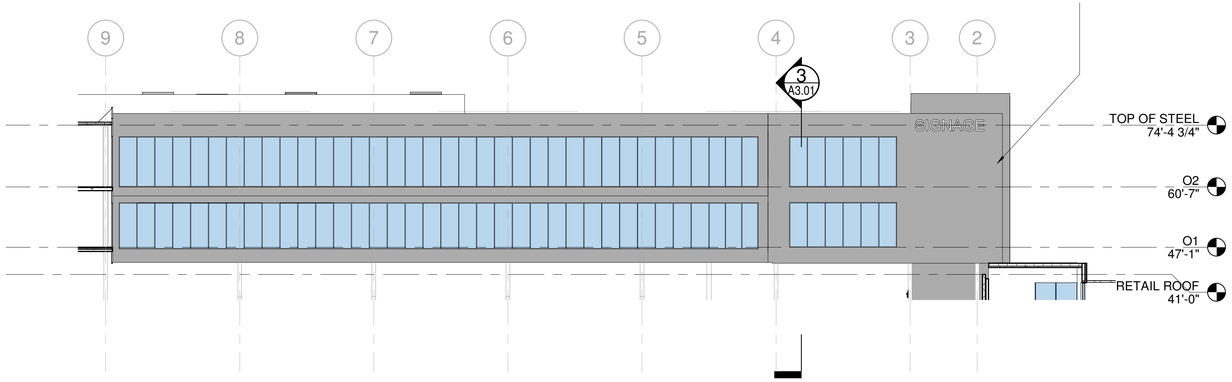
A2.01



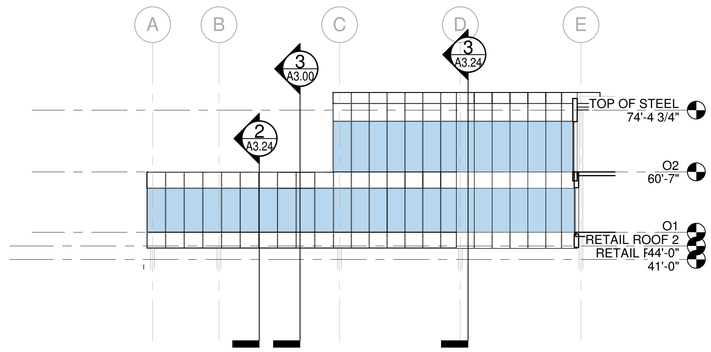
1 | SOUTH WEST ELEVATION
1/16" = 1'-0"



4 | KEY PLAN
1" = 60'-0"



3 | SOUTH OFFICE ELEVATION
1/16" = 1'-0"



2 | WEST OFFICE ELEVATION
1/16" = 1'-0"

11/30/2018
9:48:15 AM

Architect:
ARCHETYPE ARCHITECTS
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Consultant:

Prepared For:

Project:
100 FORE STREET

Address
City, State

Revisions:
PROGRESS

Scale:
As indicated

Date:
10-10-2018

BUILDING ELEVATIONS

A2.02

GROUND LEVEL ENTRY/EXIT

TRASH

GRANITE STEPS - STRUCTURAL DESIGN BY OTHERS

STAIRS

SEE LANDSCAPE AND STRUCTURAL PLANS FOR TRELLIS STRUCTURE DESIGN

GROUND LEVEL RETAIL STORE FRONT - SUBJECT TO DIMENSIONAL REFINEMENT BASED ON PROPOSED PLAZA DESIGN AND TENANT INPUT

RETAIL 2,294 SF FFE: 25'

CPT-2

L / S

TC 14.38
BC 13.8

FLUSH EDGE WITH HANDRAILS (SEE LANDSCAPE PLANS FOR DETAILS) (TYP)

GRANITE SETS (TYP)

TC 14.58
BC 14.3

TC 14.88
BC 13.8

42" HIGH MODULAR BLOCK OR CONCRETE RETAINING WALL (DESIGN BY OTHERS)

SNOW STORAGE

BENCH

TREE WELLS (SEE LANDSCAPE PLANS FOR DETAILS) (TYP)

PROTECT EXISTING UTILITY POLE

ADJUST GAS VALVE BOXES AS NECESSARY (TYP)

APPROXIMATE LIMITS OF SAWCUT (24" OFF CURB +/-)

DOUBLE YELLOW LINE

MOUNTFORT STREET

CITY STANDARD BRICK DRIVEWAY APRON

DRIVEWAY #1 ENTRY TO GROUND LEVEL PARKING

NEW POLE (BY OTHERS)

BIKE RACKS (CUSTOM S.S. SE LANDSCAPE PLANS) TYP. OF 5

SAWCUT LINE - REPLACE ALONG CURB TO BE RESET/REPLACED PER CITY REGULATIONS (TYP)

REMOVE & RESET GRANITE CURB AND PROVIDE NEW GRANITE CURB AS NECESSARY TO MEET CITY STANDARDS. REMOVE EXISTING SIDEWALK AND RECONSTRUCT WITH NEW FULL DEPTH BRICK SIDEWALK MEETING CITY STANDARDS WITHIN ROW LIMITS (TYP)

FUTURE SHIPYARD REDEVELOPMENT (BY OTHERS)

BRICK WALK

PAVED

CONC.

LEVELS - APPROXIMATE GRADES:

PARKING GARAGE
GROUND - 14.0'
LEVEL 1 - 24.5'
LEVEL 2 - 35.0'

OFFICE SPACE
LEVEL 3 - 47.08'
LEVEL 4 - 60.58'

PLAN REFERENCES:

1. "Topographic Survey, 100 Fore Street, Portland, Maine, made for Jonathan Cohen, P.O. Box 910, 865 Spring Street, Westbrook, Maine 04092", by Owen Haskell, Inc., Date: last revised 09/06/2018.
2. Building plans by Archetype, P.A.
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4. Portland sewer system infiltration - inflow analysis mapping by Hunter - Ballew associates, 1981. sheet N-3.
5. Utility Plan/Permit Set "Thames Street Extension Project", made for the City of Portland Maine 04101, Plans by: Gorrill Palmer, dated May, 2018.

CURB LEGEND

GRANITE CURB

TD — TIP DOWN

PRELIMINARY - NOT FOR CONSTRUCTION

NORTH

GRAPHIC SCALE

10 0 5 10 20

(IN FEET)
1 inch = 10 ft.

OWNER:
100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

V:\210801ac\live\210801622\civil\cad\permit\dwg\01622_sp.dwg pfillettaz 12/18/2018 10:45 AM

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Consultants

ARCHITECT
ARCHETYPE

LANDSCAPE ARCHITECT
ALA

SURVEYOR
OWEN HASKELL

CONTRACTOR
CIANBRO

Notes

Revision	By	Appd.	YY.MM.DD
7 FINAL PLAN SUBMISSION TO CITY	SRB	SRB	18.12.17
6 LEVEL III RE-SUBMISSION TO CITY	SRB	SRB	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.11.09
3 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2 PROGRESS SET	SRB	SRB	18.09.24
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 195350450_SP	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal

STATE OF MAINE
STEPHEN R. BUSHEY
12-17-18
LICENSED PROFESSIONAL ENGINEER

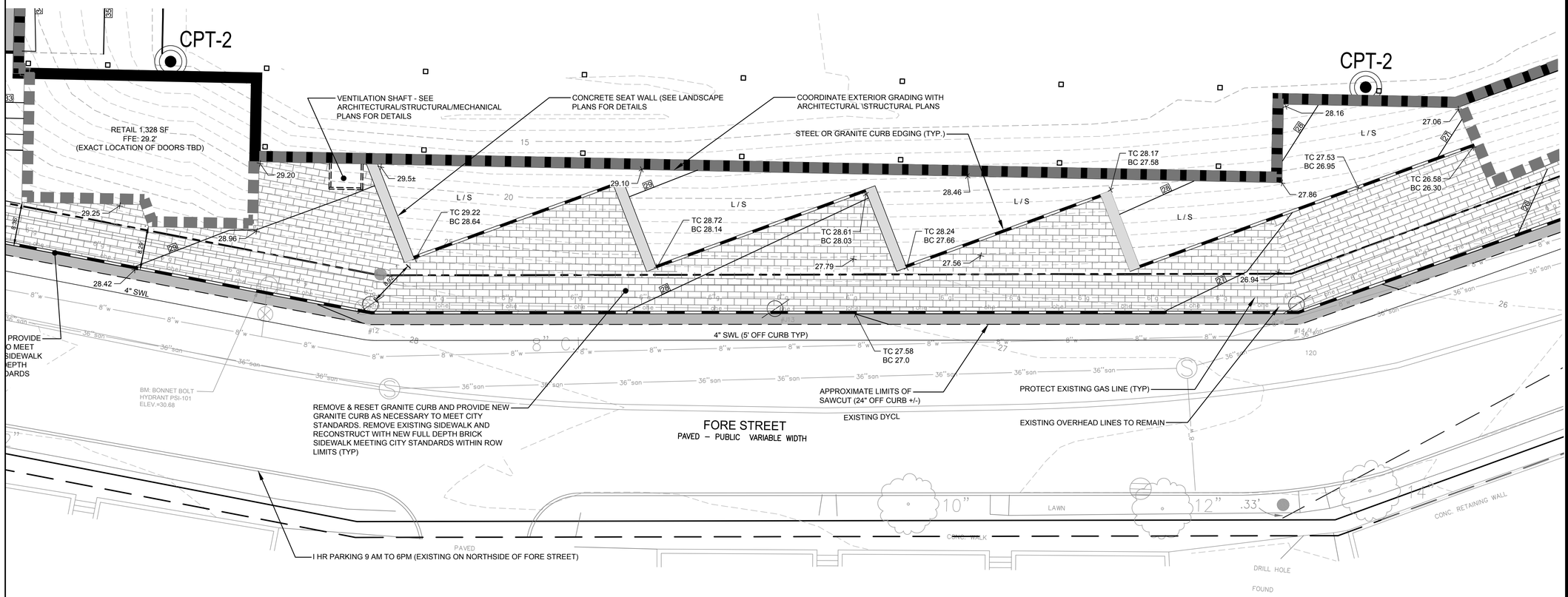
Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
PLAZA SITE & GRADING PLAN BLOWUP

Project No.	Scale
210801622	1" = 10'

Sheet
C-3.1



LEVELS - APPROXIMATE GRADES:

PARKING GARAGE
GROUND - 14.0'
LEVEL 1 - 24.5'
LEVEL 2 - 35.0'

OFFICE SPACE
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LEVEL 4 - 60.58'

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CURB LEGEND

GRANITE CURB
TD TIP DOWN

NORTH

GRAPHIC SCALE

10 0 5 10 10

(IN FEET)
1 inch = 10 ft.

OWNER:
100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

PRELIMINARY - NOT FOR CONSTRUCTION

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Consultants

ARCHITECT
ARCHETYPE

LANDSCAPE ARCHITECT
ALA

SURVEYOR
OWEN HASKELL

CONTRACTOR
CIANBRO

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File Name: 195350450_SP	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal

STATE OF MAINE
STEPHEN R. BUSHEY
12-17-18
LICENSED
PROFESSIONAL ENGINEER

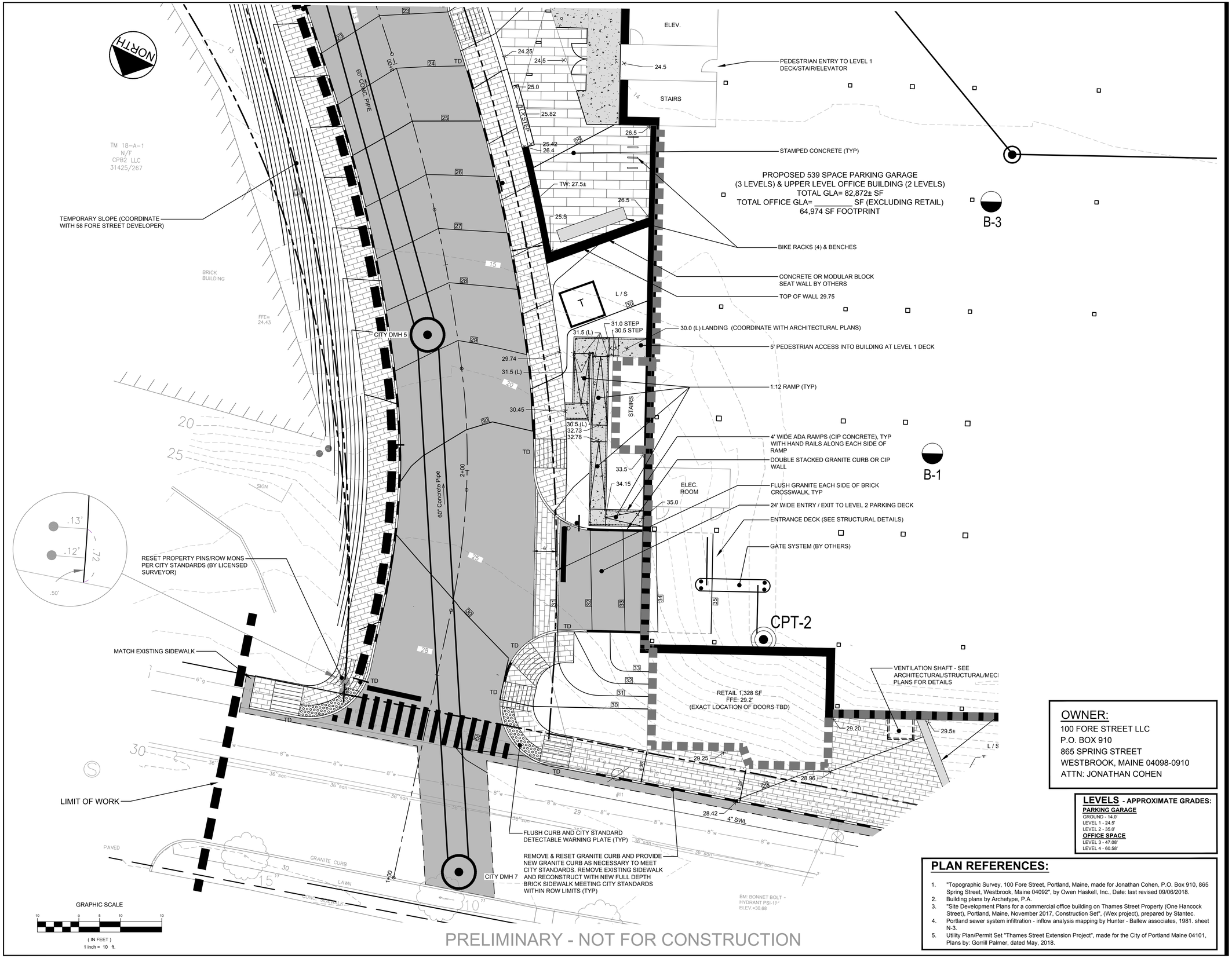
Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
FORE STREET SIDEWALK
SITE & GRADING PLAN BLOWUP

Project No. 210801622
Scale 1" = 10'

Sheet
C-3.2



PRELIMINARY - NOT FOR CONSTRUCTION

OWNER:

100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

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Consultants
ARCHITECT: ARCHETYPE
LANDSCAPE ARCHITECT: ALA
SURVEYOR: OWEN HASKELL
CONTRACTOR: CIANBRO

Notes

Revision	By	Appd.	YY.MM.DD
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2 PROGRESS SET	SRB	SRB	18.09.24
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 195350450_SP	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal



Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
ACCESS ROAD SITE & GRADING PLAN BLOWUP - SHEET 1 OF 2

Project No.	Scale
210801622	1" = 10'

Sheet
C-3.3

V:\2108\active\210801622\civil\cad\permit\dwg\01622_sp.dwg pfillette3az 12/18/2018 10:48 AM

ALL OFFSITE DESIGN AND COSTS FOR CONNECTION OF DRIVE AND SIDEWALKS TO THAMES STREET EXTENSION ARE SUBJECT TO COORDINATION WITH CITY AND 58 FORE STREET DEVELOPER

LIMIT OF WORK

FUTURE 8' WIDE BRICK SIDEWALK ON EAST SIDE OF CONNECTOR ROAD (BY OTHERS TO ALLOW FOR 58 FORE ST. DEVELOPMENT

PROSPECTIVE LAND TRANSFER TO OTHERS

CIP CONCRETE OR MODULAR BLOCK WALL SYSTETM (BY CONTRACTOR)

CITY DMH 4

CPT-3

BIKE RACKS (5)

24' WIDE ENTRY / EXIT TO LEVEL 1 PARKING DECK

GATE SYSTEM (BY OTHERS)

1ST LEVEL ENTRY/EXIT

MODULAR BLOCK RETAINING WALL (DESIGNED BY CONTRACTOR)

STANDARD DUTY PAVEMENT SECTION MEETING CITY DESIGN STANDARDS (TYP)

PEDESTRIAN ENTRY TO LEVEL 1 DECK/STAIR/ELEVATOR

STAMPED CONCRETE (TYP)

PROPOSED 539 SPACE PARKING GARAGE
(3 LEVELS) & UPPER LEVEL OFFICE BUILDING (2 LEVELS)
TOTAL GLA= 82,872± SF
TOTAL OFFICE GLA= _____ SF (EXCLUDING RETAIL)
64,974 SF FOOTPRINT

TEMPORARY SLOPE (COORDINATE WITH 58 FORE STREET DEVELOPER)

BIKE RACKS (4) & BENCHES

CONCRETE OR MODULAR BLOCK SEAT WALL BY OTHERS

TOP OF WALL 29.75

TM 19-A-2
N/F
THE CITY OF PORTLAND
21951/341

(100 FORE ST.)

TM 19-A-13
N/F
JACKRABBIT LIMITED LIABILITY COMPANY
12434/163

TM 18-A-1
N/F
CPB2 LLC
31425/267

WRDZ
WSUZ

60" CONC. PIPE

4'x9'

TWO 60" CONC. PIPE

JERSEY BARRIERS

MAG NAIL FOUND

PAVED

STOCKADE FENCE

DUMPSTER AREA

ZONE LINE

ELEV.

STAIRS

STEEP

TD

TW: 27.5±

25.05

24.25

24.5

25.0

25.82

25.42

26.4

26.5

25.5

BRICK BUILDING

L / S

NORTH

GRAPHIC SCALE
10 0 5 10 20
(IN FEET)
1 inch = 10 ft.

OWNER:
100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

LEVELS - APPROXIMATE GRADES:
PARKING GARAGE
GROUND - 14.0'
LEVEL 1 - 24.5'
LEVEL 2 - 35.0'
OFFICE SPACE
LEVEL 3 - 47.08'
LEVEL 4 - 60.58'

PLAN REFERENCES:
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Consultants
ARCHITECT
ARCHETYPE
LANDSCAPE ARCHITECT
ALA
SURVEYOR
OWEN HASKELL
CONTRACTOR
CIANBRO

Notes

No.	Revision	By	Appd.	YY.MM.DD
7	FINAL PLAN SUBMISSION TO CITY	SRB	DBS	18.12.17
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3	LEVEL III SUBMISSION TO CITY	SRB	DBS	18.10.09
2	PROGRESS SET	SRB	DBS	18.09.24
1	INTERNAL REVIEW	SRB	DBS	18.09.14

File Name: 195350450_SP | DWN. SRB | CHKD. DBS | DSGN. SRB | DATE 18.09.12
P.E. STEPHEN R. BUSHEY

Permit-Seal

STATE OF MAINE
STEPHEN R. BUSHEY
12-17-18
LICENSED PROFESSIONAL ENGINEER

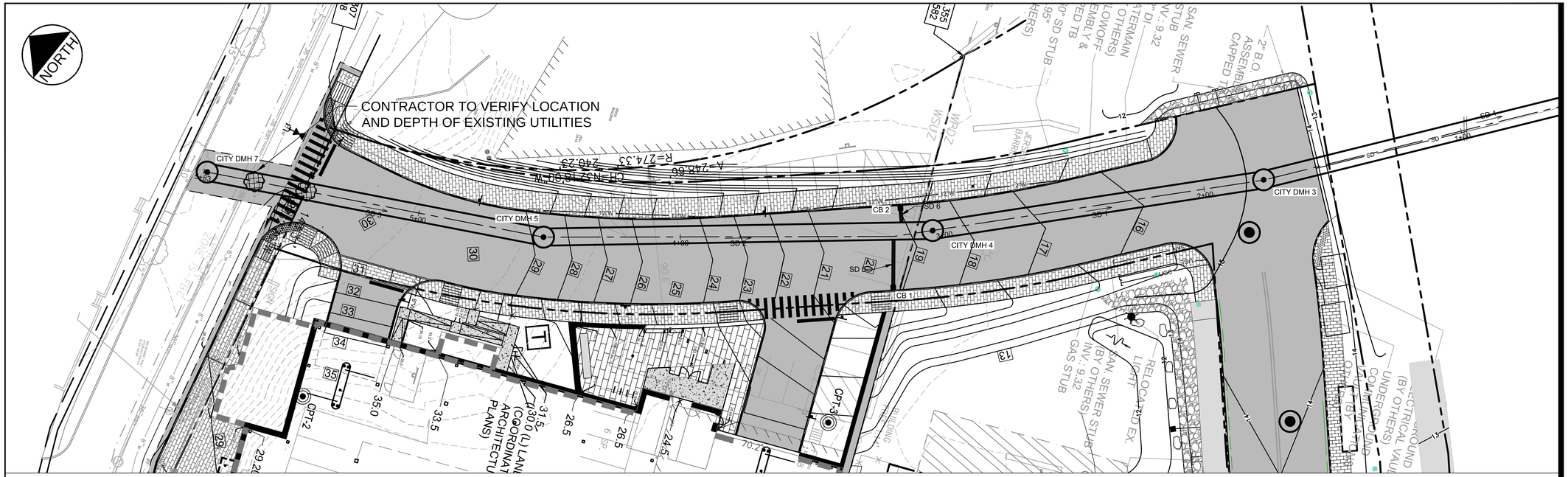
Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
ACCESS ROAD SITE & GRADING PLAN BLOWUP - SHEET 2 OF 2

Project No. 210801622
Scale 1" = 10'

Sheet
C-3.4


NORTH
CONTRACTOR TO VERIFY LOCATION
AND DEPTH OF EXISTING UTILITIES
CITY DMH 7
CITY DMH 5
CITY DMH 4
CITY DMH 3
CB 1
CB 2
SD 6
SD 1
SD 4
CPT-2
CPT-3
CPT-4
CPT-5
CPT-6
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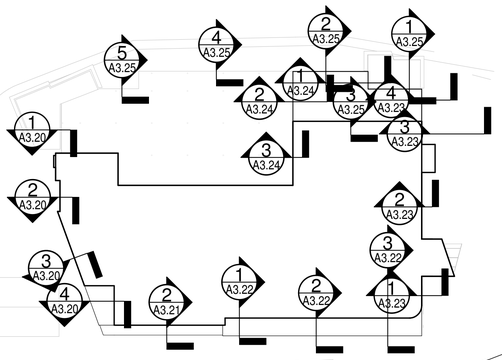
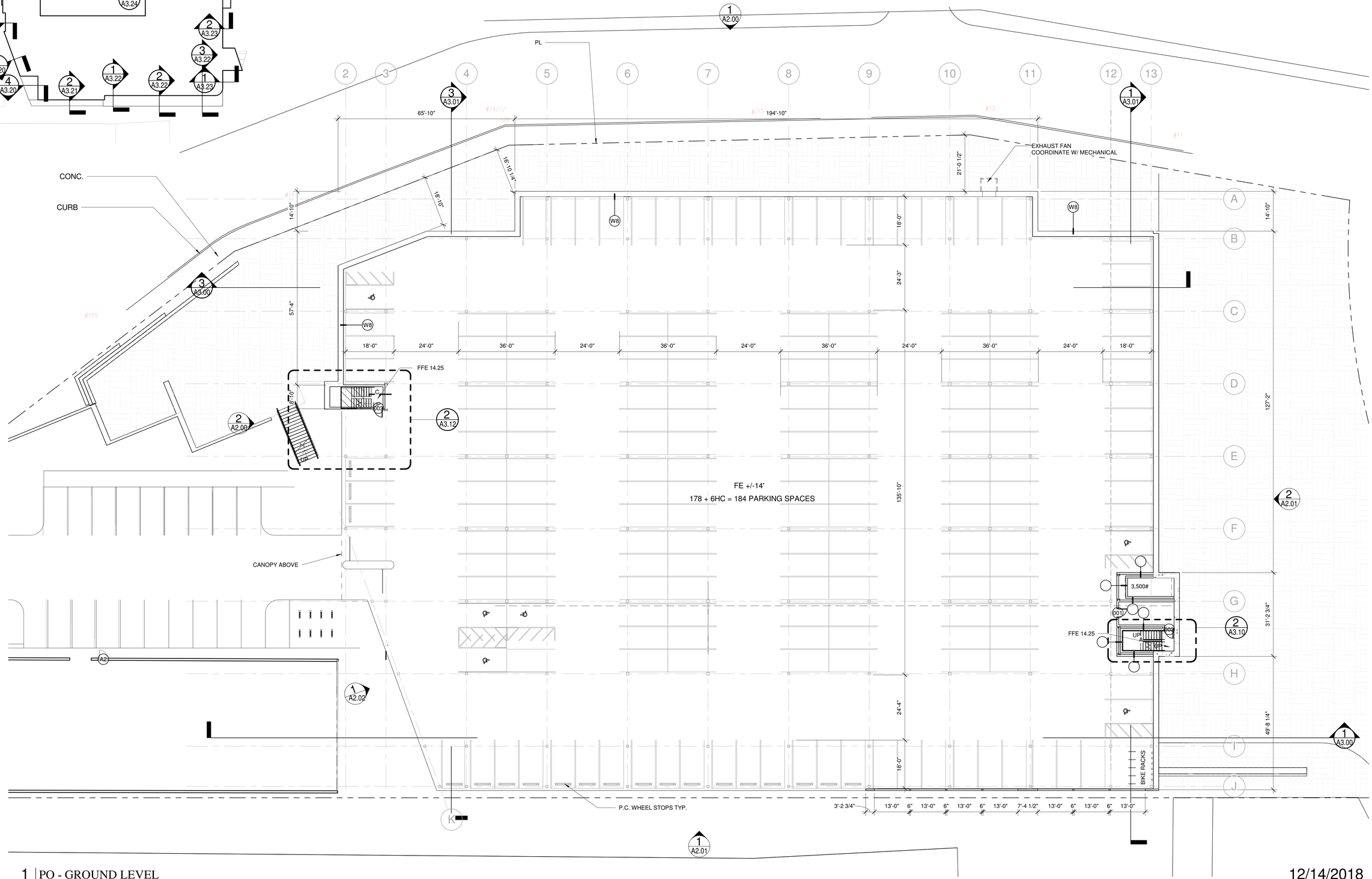




1 | PO - GROUND LEVEL
1/16" = 1'-0"

12/14/2018
12:44:47 PM

Prepared For:

Consultant:

Architect:
ARCHETYPE ARCHITECTS
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
100 FORE STREET
Address
City, State

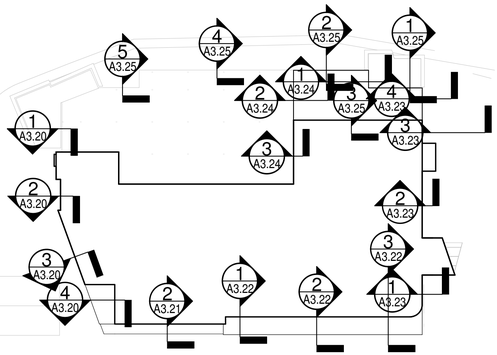
Revisions:
PROGRESS

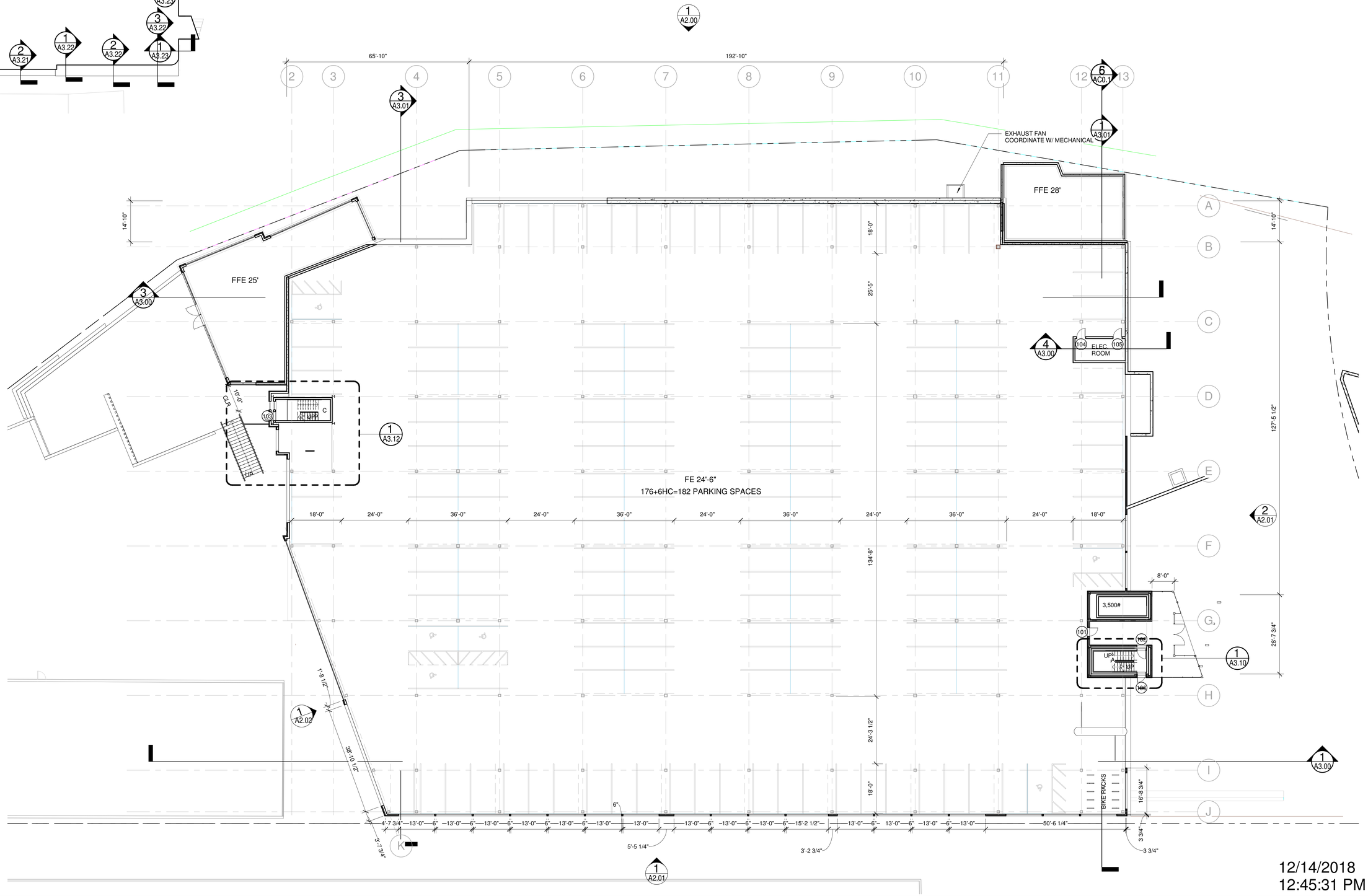
Scale:
As indicated

Date:
11-30-2018

P0- GROUND LEVEL PARKING

A1.00





12/14/2018
12:45:31 PM

Prepared For:

Consultant:

Architect:
ARCHETYPE ARCHITECTS
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
100 FORE STREET
Address
City, State

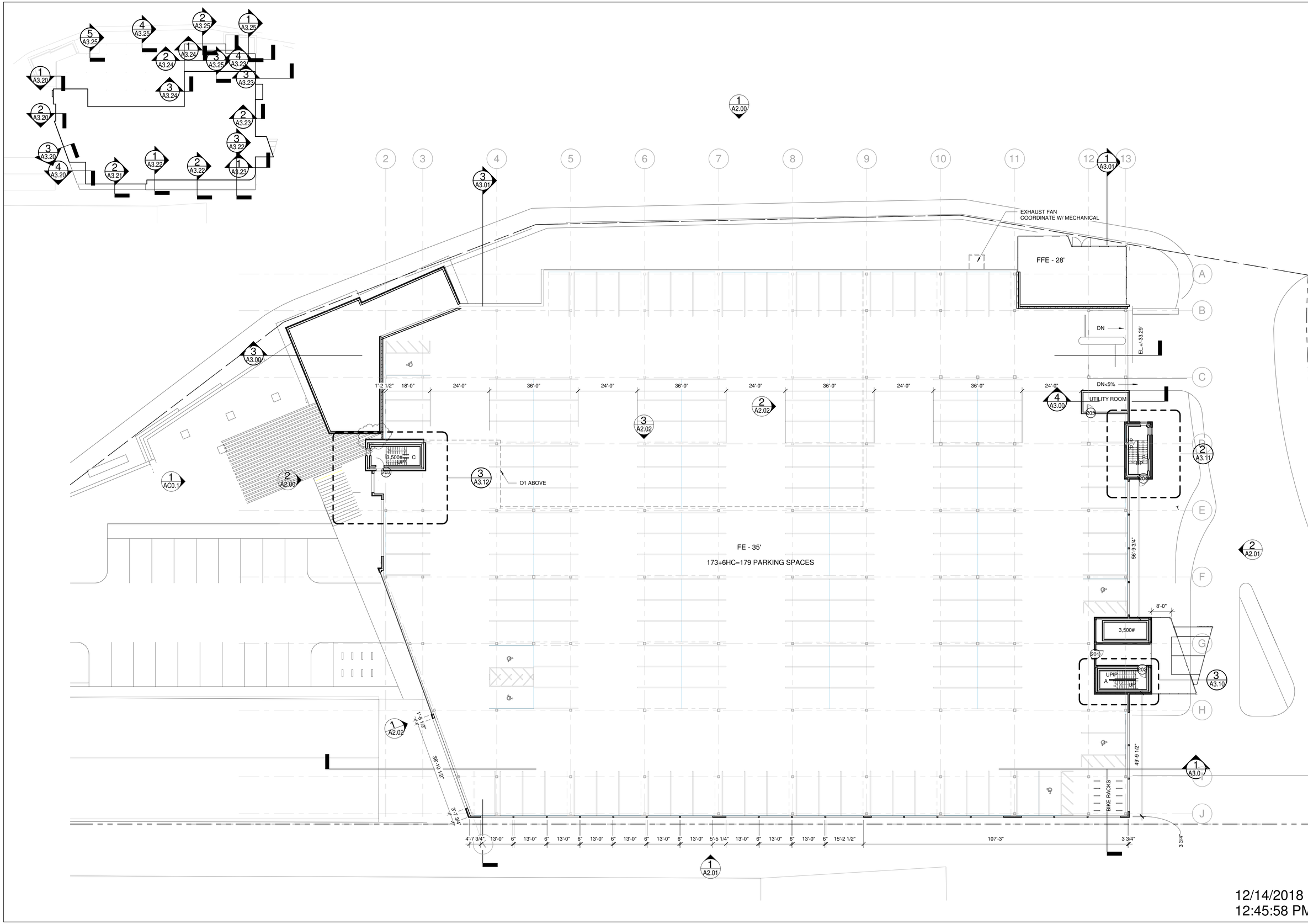
Revisions:
PROGRESS

Scale:
As indicated

Date:
11-30-2018

P1 -ELEVATED PARKING (1)

A1.01



12/14/2018
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Prepared For:

Consultant:

Architect:
ARCHETYPE ARCHITECTS
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(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
100 FORE STREET

Address
City, State

Revisions:

1	Date 1	Revision 1

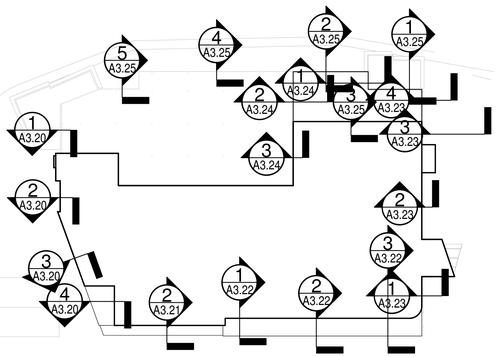
PROGRESS

Scale:
As indicated

Date:
11-30-2018

P2 - ELEVATED PARKING (2)

A1.02



1 | 01
1/16" = 1'-0"

12/14/2018
12:46:23 PM

Prepared For:
Address
City, State

Consultant:

Architect:
ARCHETYPE ARCHITECTS
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
100 FORE STREET
Address
City, State

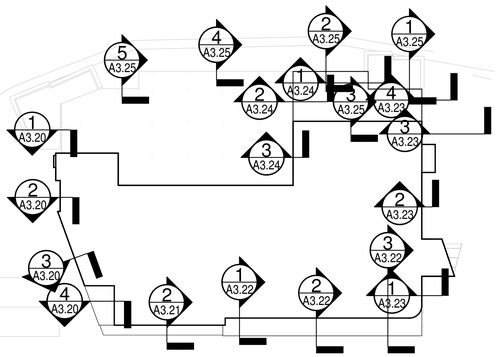
Revisions:
PROGRESS

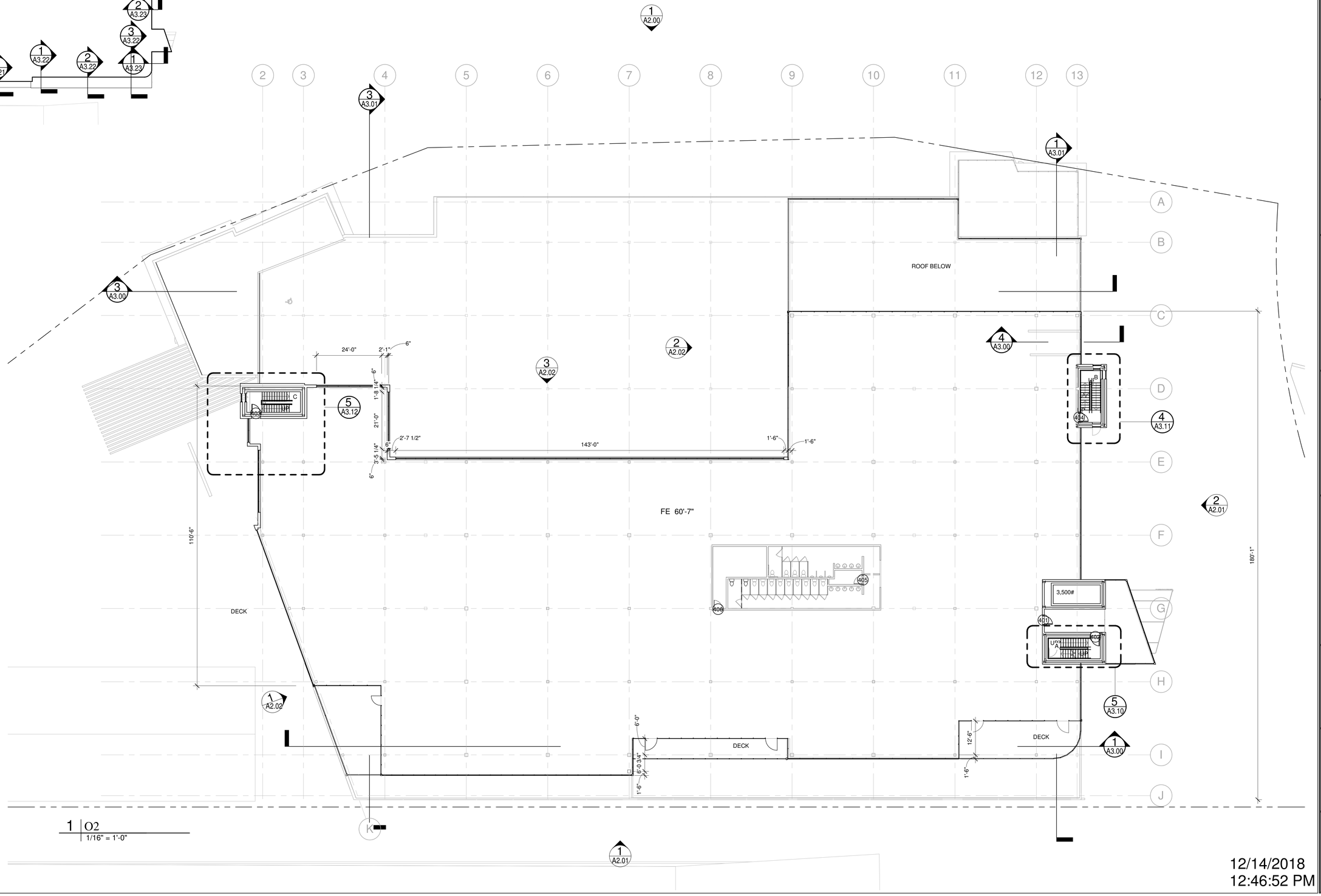
Scale:
As indicated

Date:
11-30-2018

O1 - OFFICE (1)

A1.03





12/14/2018
12:46:52 PM

Prepared For:

Address
City, State

Consultant:

Architect:
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(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
100 FORE STREET

Address
City, State

Revisions:
PROGRESS

Scale:
As indicated

Date:
11-30-2018

O2 - OFFICE (2)

A1.04

Calculation Summary					
Room Name	**Avg**	**Max**	**Min**	**Avg/Min**	**Max/Min**
ground level_Floor	3.43	68.5	0.0	N.A.	N.A.
ENTRY	47.15	68.5	24.5	1.9	2.8
TYP DRIVE LANE	2.89	5.2	1.8	1.6	2.9

Room Summary	
Room Name	**Wall Ht.**
ground level	10

Luminaire Schedule (note fixture cataloge numbers are not complete)					
Tag	**Qty**	**Lum. Lumens**	**LLF**	**Lum. Watts**	**Description**
G3	7	12386	0.900	109.855	EDR-48L-110-4K7-5QM-U
W1	10	2140	0.900	19.9	TRP1-12L20-4K7-3
G1	38	3398	0.900	27.7	EDR-24L-27-4K7-5R-U
G2	6	3341	0.900	27.7	EDR-24L-27-4K7-5QM-U

NOTES:
1) EXACT MOUNTING DETAILS TO BE DETERMINED AT JOBSITE BY OTHERS.
2) CALCULATIONS MAY or MAY NOT SHOW THE EFFECT OF SHADOWING CAUSED BY BUILDINGS AND OBJECTS WITHIN THE CALCULATED SPACE.
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6) THIS LAYOUT DRAWING MUST BE COORDINATED WITH THE SITE LOCATION FOR CORRECT FIXTURE ORIENTATION.
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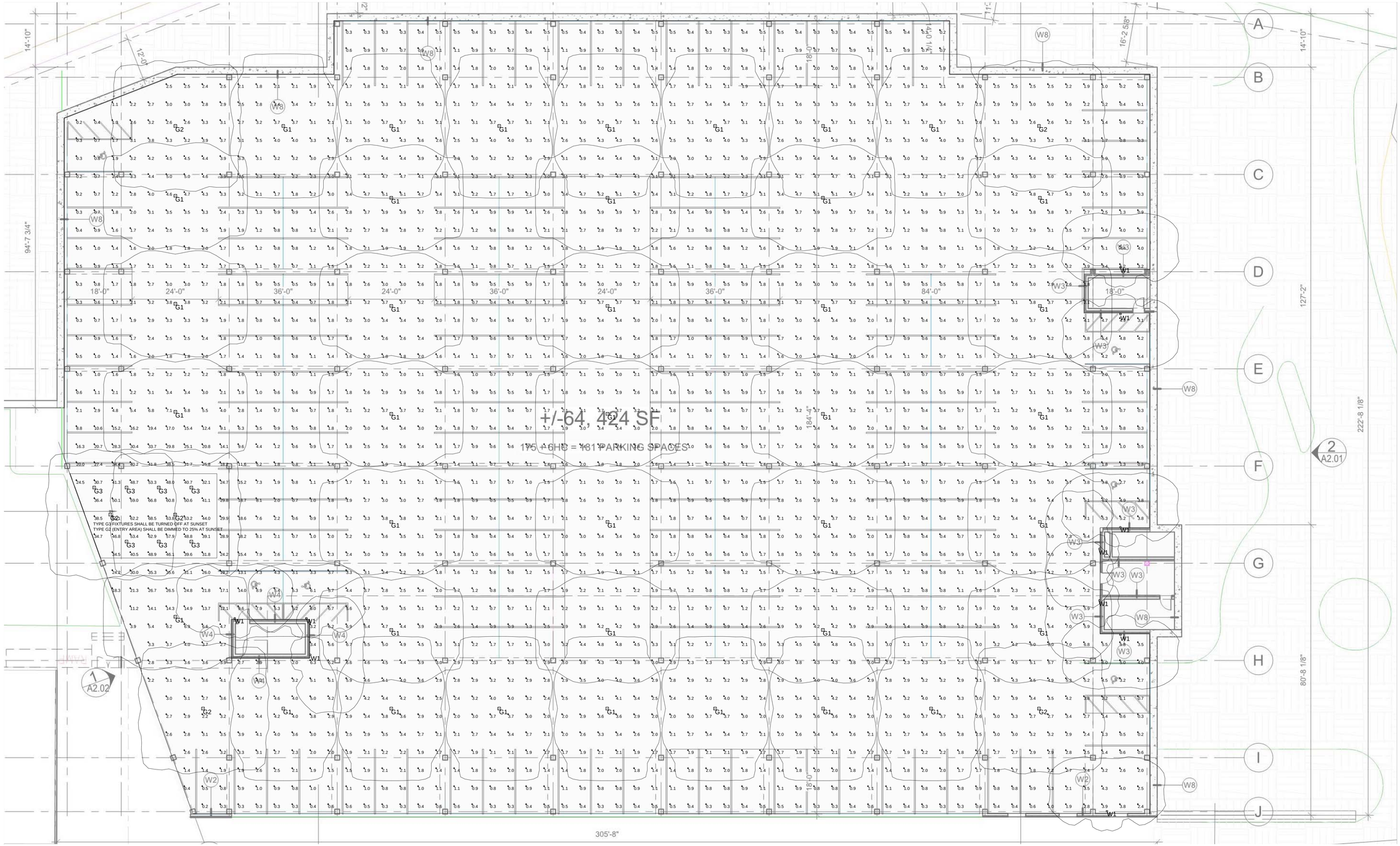

PLAN VIEW

TITLE
100 FORE STREET
PORTLAND, ME
PO-GROUND LEVEL - LIGHTING LAYOUT

GENERATED FOR: STANTEC
SCALE AS SHOWN
Page 1 of 1
Date:10/2/2018
GENERATED BY SWANEY LIGHTING, SCARBOROUGH ME - 207-883-7100 - swaneylighting.com
REF. NO. PARK P0 - OPTION 1.AGI

SWANEY LIGHTING ASSOCIATES, INC.

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Calculation Summary					
Room Name	**Avg**	**Max**	**Min**	**Avg/Min**	**Max/Min**
P1 level_Floor	3.60	76.3	0.0	N.A.	N.A.
ENTRY	49.91	76.3	29.7	1.7	2.6
TYP DRIVE LANE	2.78	5.4	1.7	1.6	3.2

Room Summary	
Room Name	**Wall Ht.**
P1 level	10

Luminaire Schedule (note fixture catalogue numbers are not complete)					
Tag	**Qty**	**Lum. Lumens**	**LLF**	**Lum. Watts**	**Description**
G3	8	12386	0.900	109.855	EDR-48L-110-4K7-5QM-U
W1	11	2140	0.900	19.9	TRP1-12L20-4K7-3
G1	39	3398	0.900	27.7	EDR-24L-27-4K7-5R-U
G2	5	3341	0.900	27.7	EDR-24L-27-4K7-5QM-U

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PLAN VIEW

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TITLE
100 FORE STREET
PORTLAND, ME
P1 LEVEL - LIGHTING LAYOUT

GENERATED FOR: STANTEC
SCALE AS SHOWN
Page 1 of 1

REF. NO. PARK P1 - OPTION 1.AGI
GENERATED BY SWANEY LIGHTING, SCARBOROUGH ME - 207-883-7100 - swaneylighting.com
Date:10/3/2018

SWANEY LIGHTING ASSOCIATES, INC.

Calculation Summary					
Room Name	**Avg**	**Max**	**Min**	**Avg/Min**	**Max/Min**
parking deck	3.43	75.1	0.1	34.3	751.0
OPEN DECK	1.45	3.1	0.4	3.6	7.8

Luminaire Schedule (note fixture catalogue numbers are not complete)					
Tag	**Qty**	**Lum. Lumens**	**LLF**	**Lum. Watts**	**Description**
G1	28	3398	0.900	27.7	EDR-24L-27-4K7-5R-U
G2	4	3341	0.900	27.7	EDR-24L-27-4K7-5QM-U
G3	8	12386	0.900	109.855	EDR-48L-110-4K7-5QM-U
S4B	5	3399	0.900	53.2	VP-S-24L-55-3K7-4W-BC
S5	2	5908	0.900	57.8907	VP-S-24L-55-3K7-5W
W1	10	2140	0.900	19.9	TRP1-12L20-4K7-3

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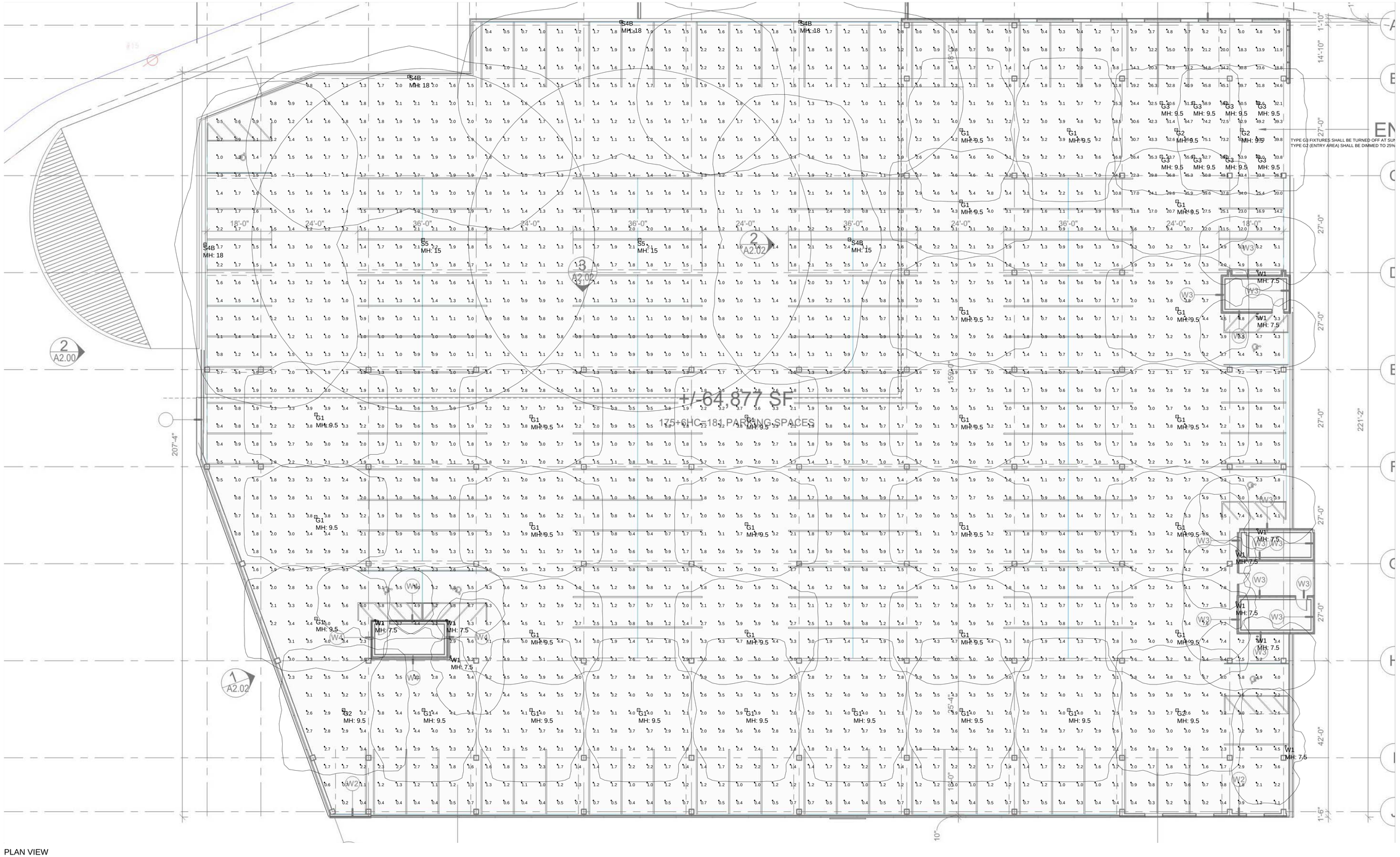

PLAN VIEW

TITLE
100 FORE STREET
PORTLAND, ME
P2 LEVEL - LIGHTING LAYOUT

REF. NO. PARK P2 - OPTION 1.AGI

GENERATED BY SWANEY LIGHTING, SCARBOROUGH ME - 207-883-7100 - swaneylighting.com

Date:10/9/2018

GENERATED FOR: STANTEC

SCALE AS SHOWN

Page 1 of 1

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Calculation Summary					
Room Name	**Avg**	**Max**	**Min**	**Avg/Min**	**Max/Min**
SITE	0.49	4.6	0.0	N.A.	N.A.
west parking	1.35	1.9	0.6	2.3	3.2

Luminaire Schedule (note fixture catalogue numbers are not complete)					
Tag	**Qty**	**Lum. Lumens**	**LLF**	**Lum. Watts**	**Description**
S3B	2	3758	0.900	54.88	VP-S-24L-55-3K7-3-BC
S4B	8	3399	0.900	53.2	VP-S-24L-55-3K7-4W-BC
W1	10	2140	0.900	19.9	TRP1-12L20-4K7-3
X5C	6	6220	0.900	109	ESL 110 4K AS X 7 DS

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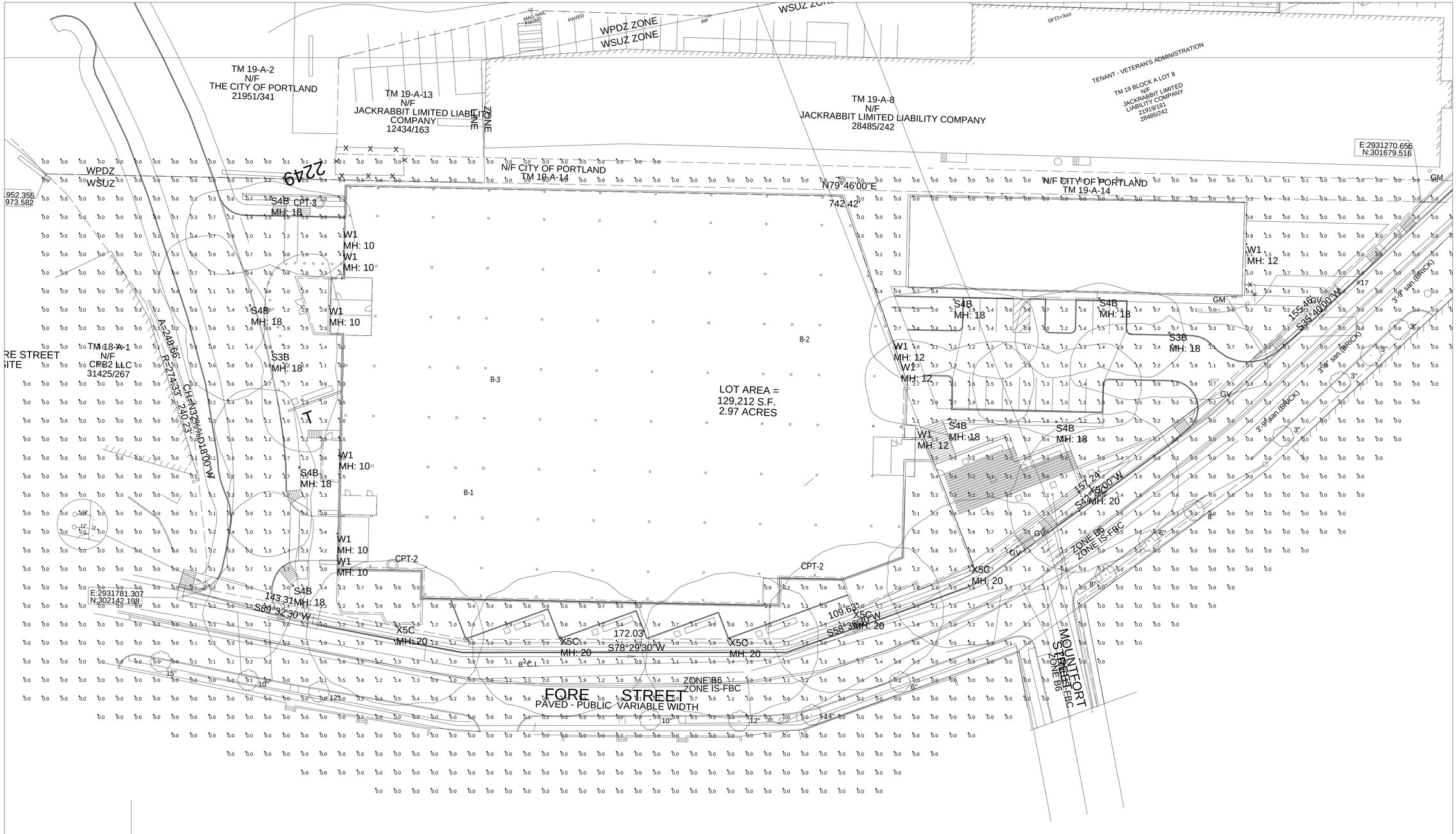

PLAN VIEW

TITLE
100 FORE STREET
PORTLAND, ME
SITE LIGHTING LAYOUT

REF. NO. site 11-27-18.AGI

GENERATED BY SWANEY LIGHTING, SCARBOROUGH ME - 207-883-7100 - swaneylighting.com

Date:11/27/2018

GENERATED FOR:
STANTEC

SCALE AS SHOWN

Page 1 of 1

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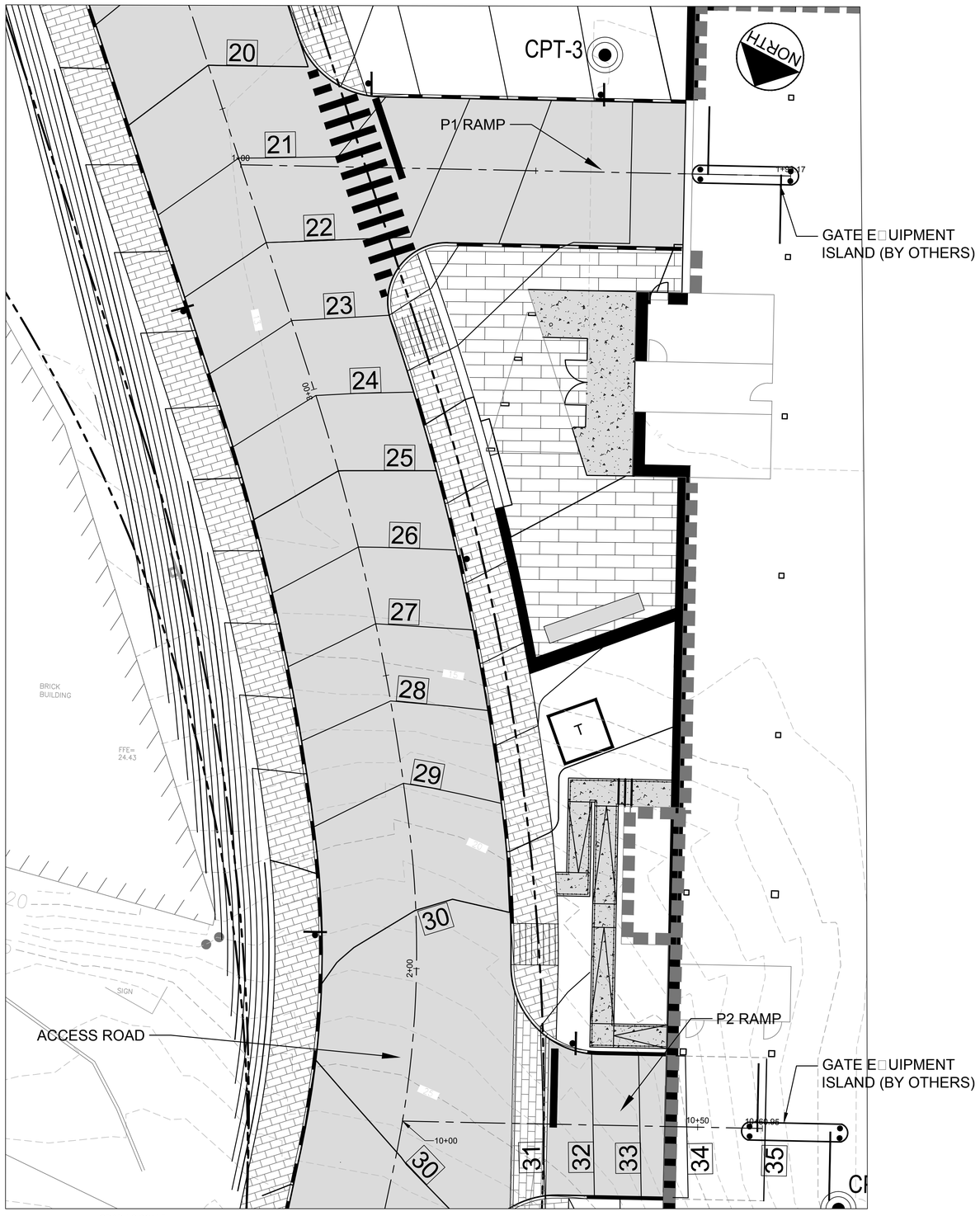

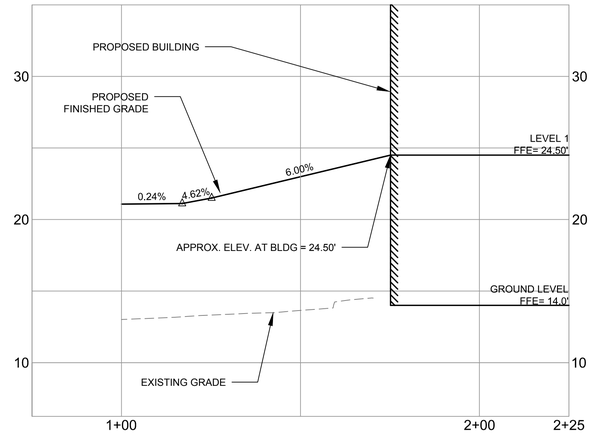

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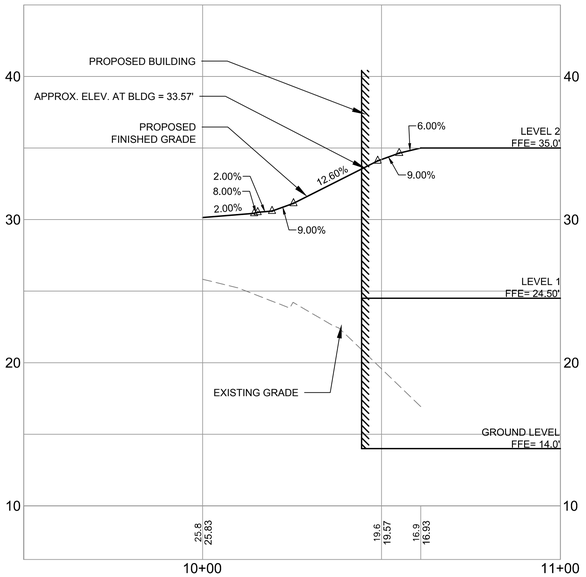
VT SCALE: 1" = 5'



P2 RAMP
HZ SCALE: 1" = 20'
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Scarborough, Maine 04074-8929
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LANDSCAPE ARCHITECT
ALA

SURVEYOR
OWEN HASKELL

CONTRACTOR
CIANBRO

Notes

OWNER:
100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

Revision	By	Appd.	YY.MM.DD
7 FINAL PLAN SUBMISSION TO CITY	SRB	SRB	18.12.17
6 LEVEL III RE-SUBMISSION TO CITY	SRB	SRB	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4 LEVEL III RE-SUBMISSION TO CITY	SRB	SRB	18.11.09
3 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2 PROGRESS SET	SRB	SRB	18.09.24
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 01622_road_prof	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

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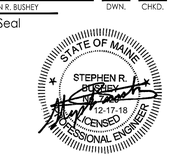


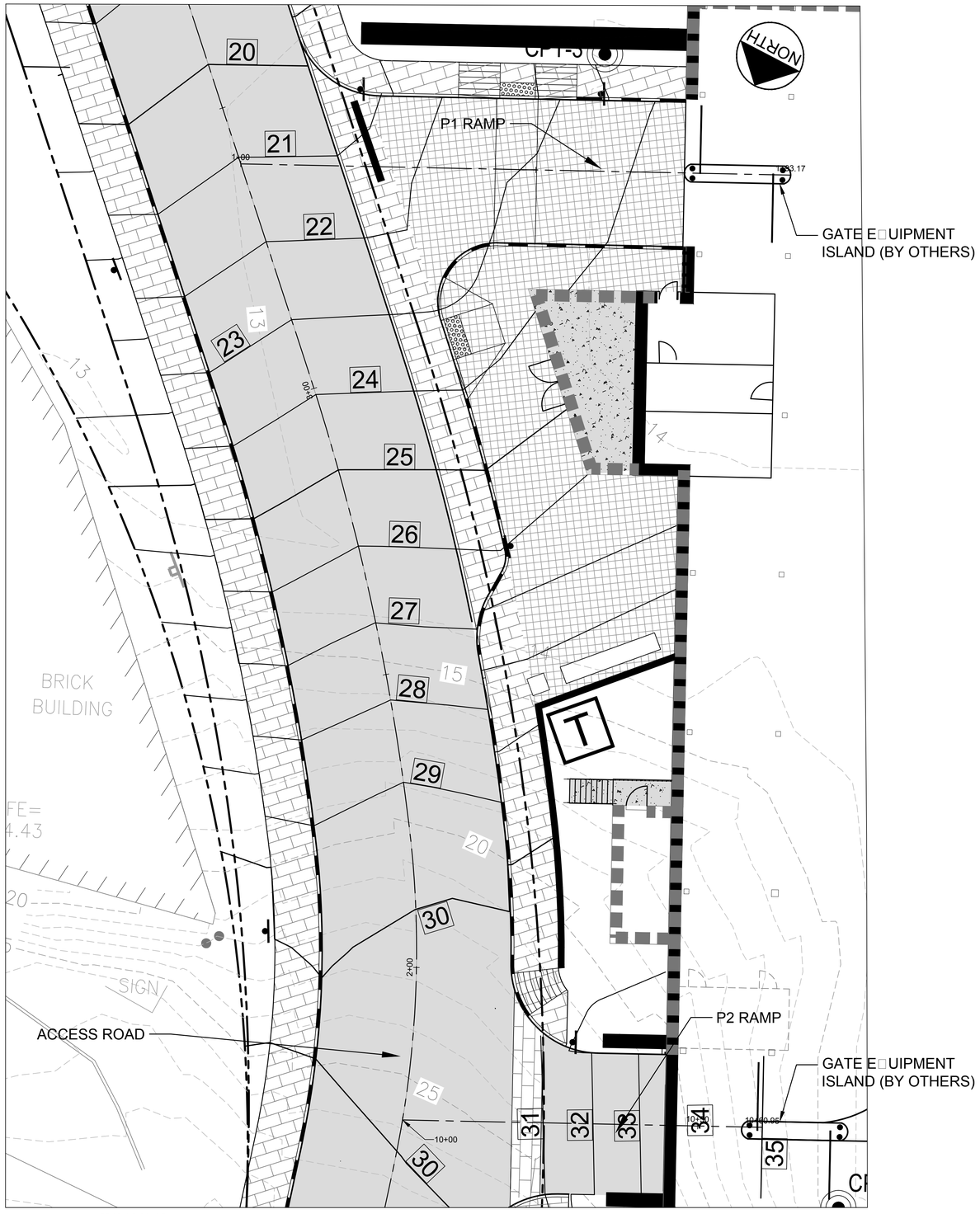
Client/Project
100 FORE STREET LLC
WESTBROOK, ME

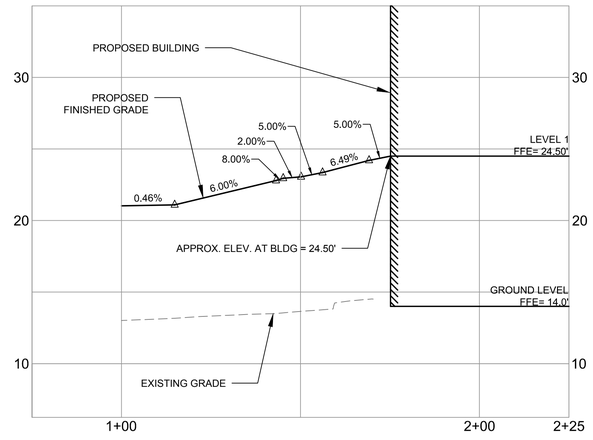
100 FORE STREET
PORTLAND, MAINE

Title
LEVEL 2 & LEVEL 3
RAMP PROFILES

Project No. 210801622
Scale AS NOTED

Sheet
C-4.5





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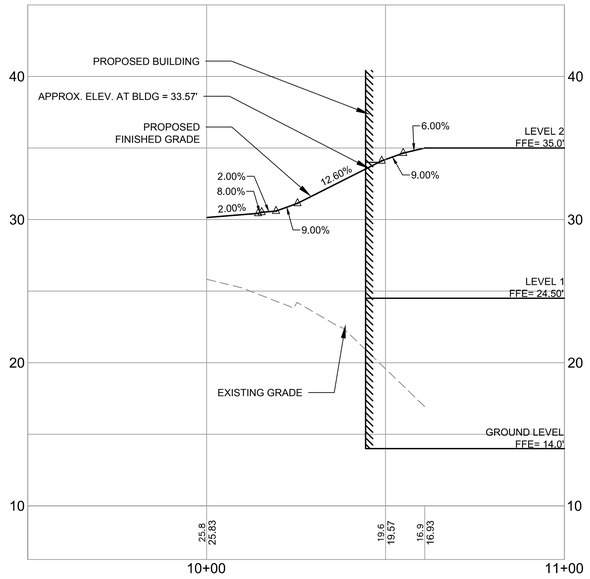

P2 RAMP
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VT SCALE: 1" = 5'

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Notes

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P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

Revision	By	Appd.	YY.MM.DD
6 LEVEL III RE-SUBMISSION TO CITY	SRB	SRB	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4 LEVEL III RE-SUBMISSION TO CITY	SRB	SRB	18.11.09
3 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2 PROGRESS SET	SRB	SRB	18.09.24
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 195350450_SP	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal

STATE OF MAINE
STEPHEN R. BUSHEY
11-30-18
LICENSED
PROFESSIONAL ENGINEER

Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
LEVEL 2 & LEVEL 3
RAMP PROFILES

Project No. 210801622
Scale AS NOTED

Sheet
C-4.5

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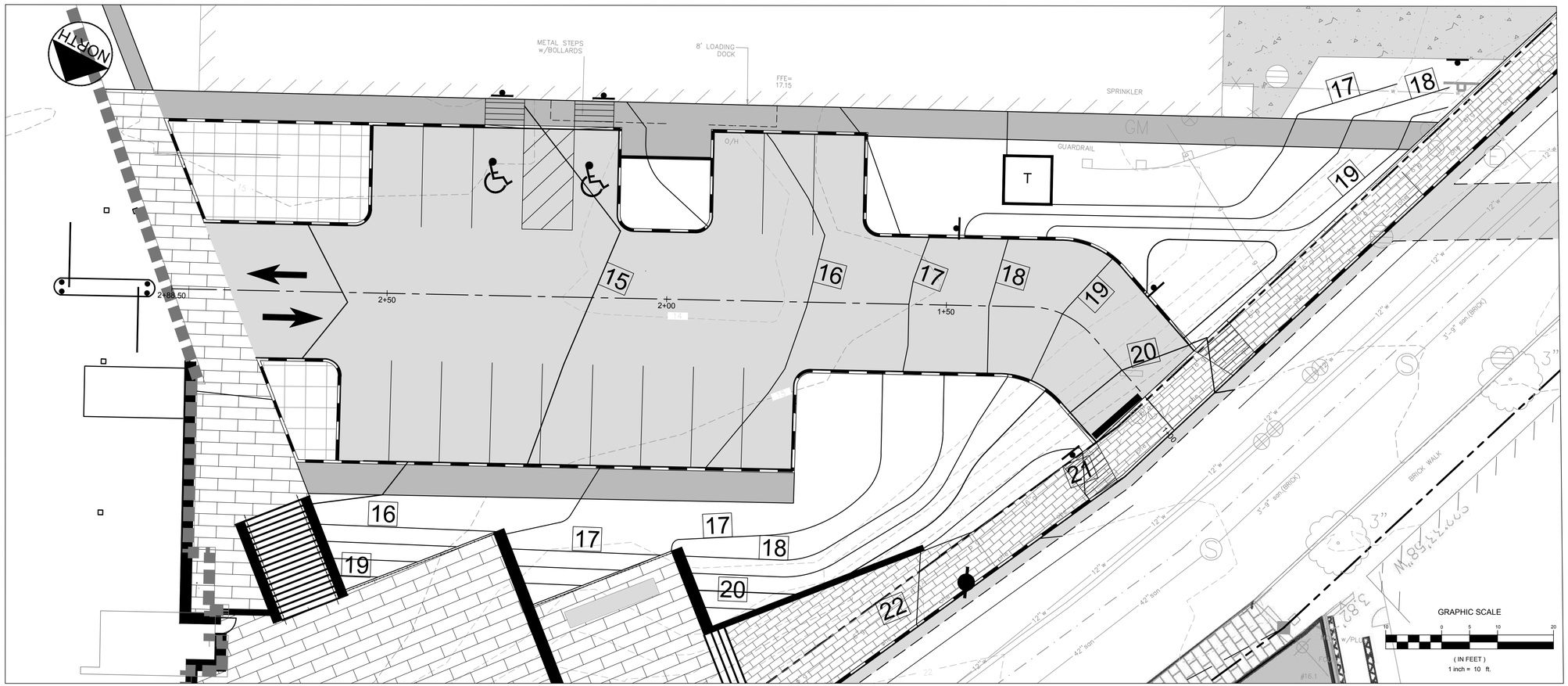

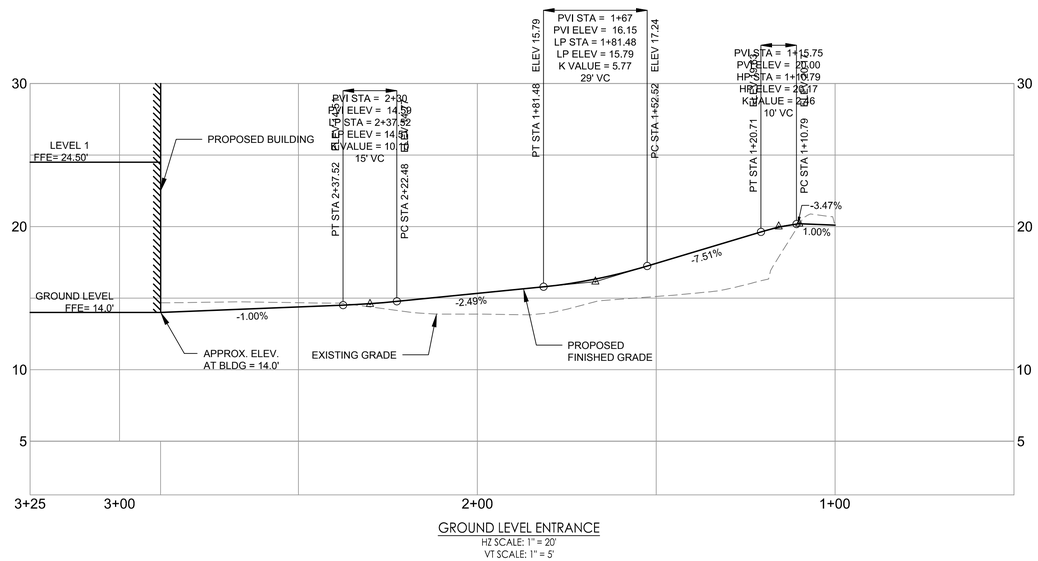

GROUND LEVEL ENTRANCE
HZ SCALE: 1" = 20'
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6 LEVEL III RES-SUBMISSION TO CITY	SRB	SRB	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4 LEVEL III RES-SUBMISSION TO CITY	SRB	SRB	18.11.09
3 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2 PROGRESS SET	SRB	SRB	18.09.24
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 01622_road_prof	PBF	DBS	SRB	18.09.14
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal
STATE OF MAINE
STEPHEN R. BUSHEY
12-17-18
LICENSED PROFESSIONAL ENGINEER

Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
GROUND LEVEL RAMP PROFILE

Project No.
210801622

Scale
AS NOTED

Sheet
C-4.6

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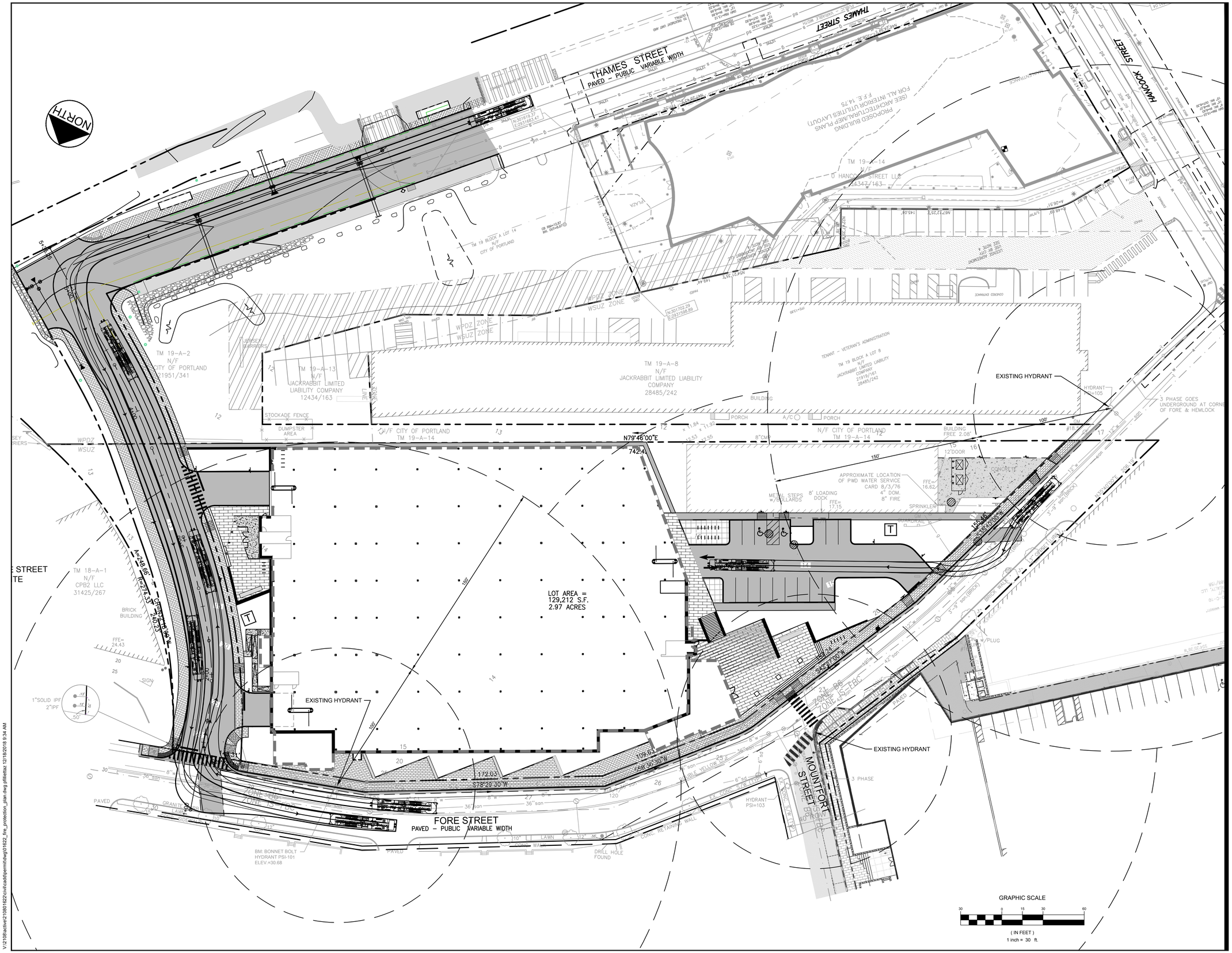

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Consultants

ARCHITECT
ARCHETYPE

LANDSCAPE ARCHITECT
ALA

SURVEYOR
OWEN HASKELL

CONTRACTOR
CIANBRO

Notes

OWNER:
100 FORE STREET LLC
P.O. BOX 910
865 SPRING STREET
WESTBROOK, MAINE 04098-0910
ATTN: JONATHAN COHEN

Revision	By	Appd.	YY.MM.DD
7 FINAL PLAN SUBMISSION TO CITY	SRB	SRB	18.12.17
6 LEVEL III RE-SUBMISSION TO CITY	SRB	SRB	18.11.30
5 PROGRESS PRINTS RELEASED TO CONTRACTOR	SRB	SRB	18.11.14
4 LEVEL III RE-SUBMISSION TO CITY	SRB	SRB	18.11.09
3 LEVEL III SUBMISSION TO CITY	SRB	SRB	18.10.09
2 PROGRESS SET	SRB	SRB	18.09.24
1 INTERNAL REVIEW	SRB	SRB	18.09.14

File Name: 195350450_SP	DWN.	DBS	SRB	18.09.12
P.E. STEPHEN R. BUSHEY	DWN.	CHKD.	DSGN.	DATE

Permit-Seal

Client/Project
100 FORE STREET LLC
WESTBROOK, ME

100 FORE STREET
PORTLAND, MAINE

Title
FIRE PROTECTION PLAN

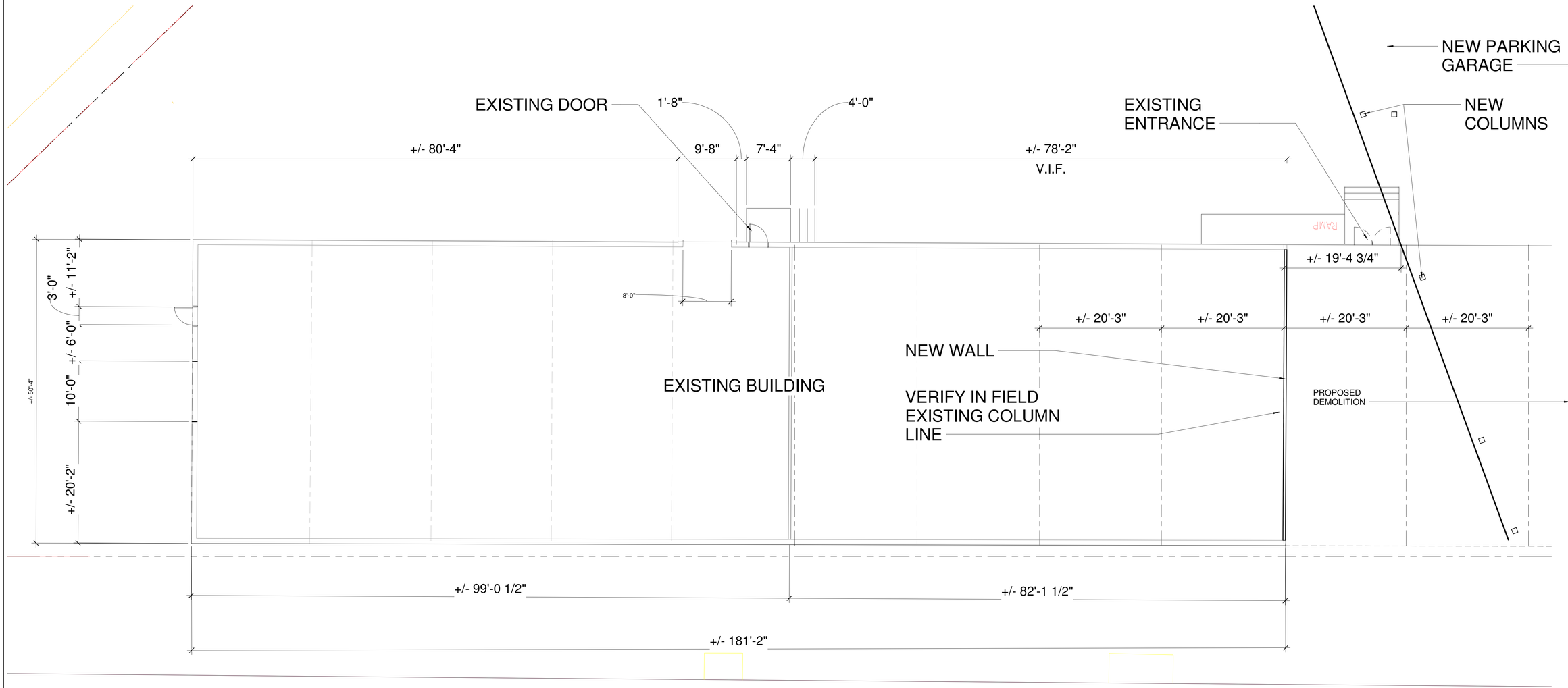
Project No. 210801622

Scale 1" = 30'

Sheet
EXHIBIT 1


HAMILTON





1 HAMILTON MARINE PLAN
1/8" = 1'-0"

Prepared For:
Address
City, State

Consultant:

Architect:
ARCHETYPE ARCHITECTS
48 Union Wharf Portland, Maine 04101
(207) 772-6022 ARCHETYPE@ARCHETYPEPA.COM

Project:
100 FORE STREET
Address
City, State

Revisions:

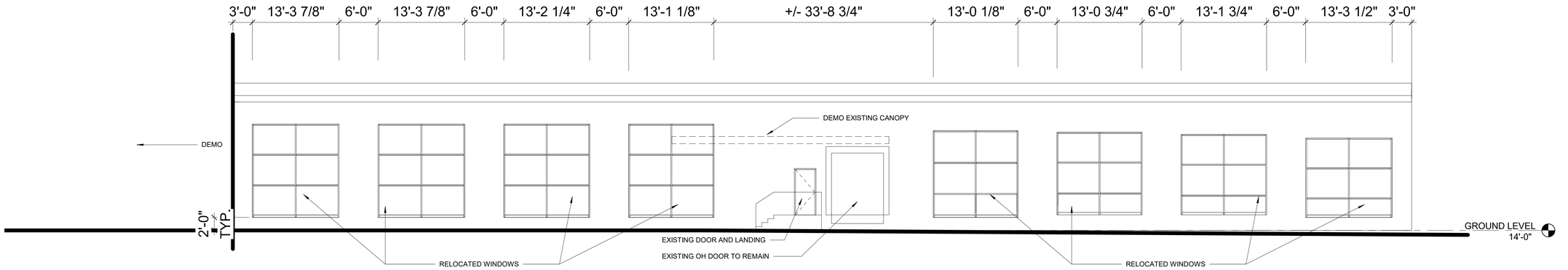
Scale: 1/8" = 1'-0"

Date: 10-10-2018

HAMILTON MARINE PLAN

A0.00


SIGNAGE



1 NORTH ELEVATION
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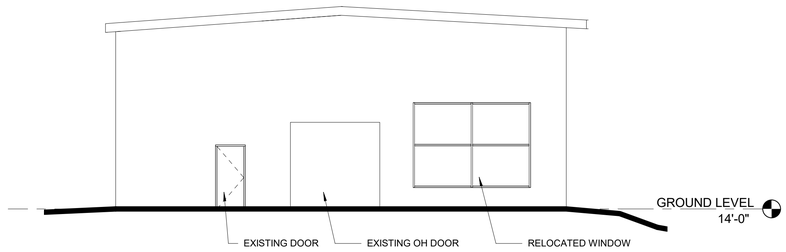

2 WEST ELEVATION
1/8" = 1'-0"

NOTE:
EXISTING SIDING TO REMAIN

Prepared For:
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Revisions:

Scale: 1/8" = 1'-0"

Date: 6/14/2018

HAMILTON MARINE
ELEVATIONS

A0.02


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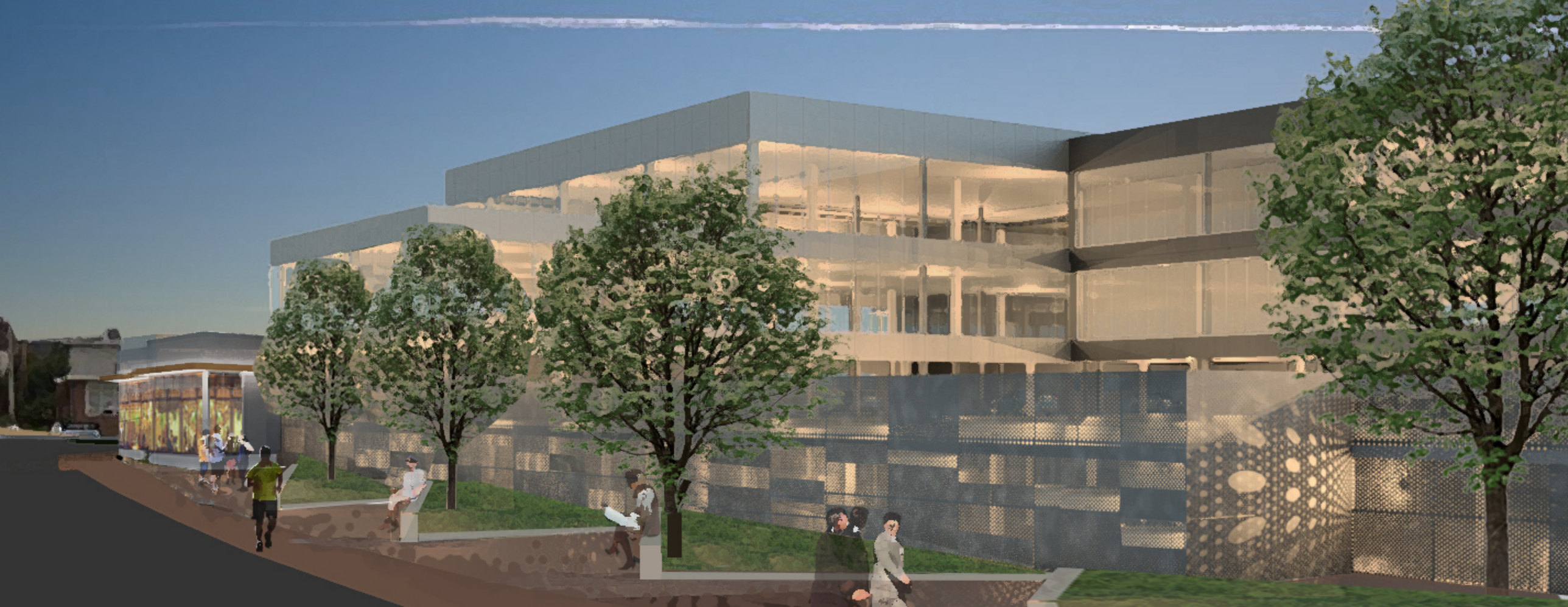


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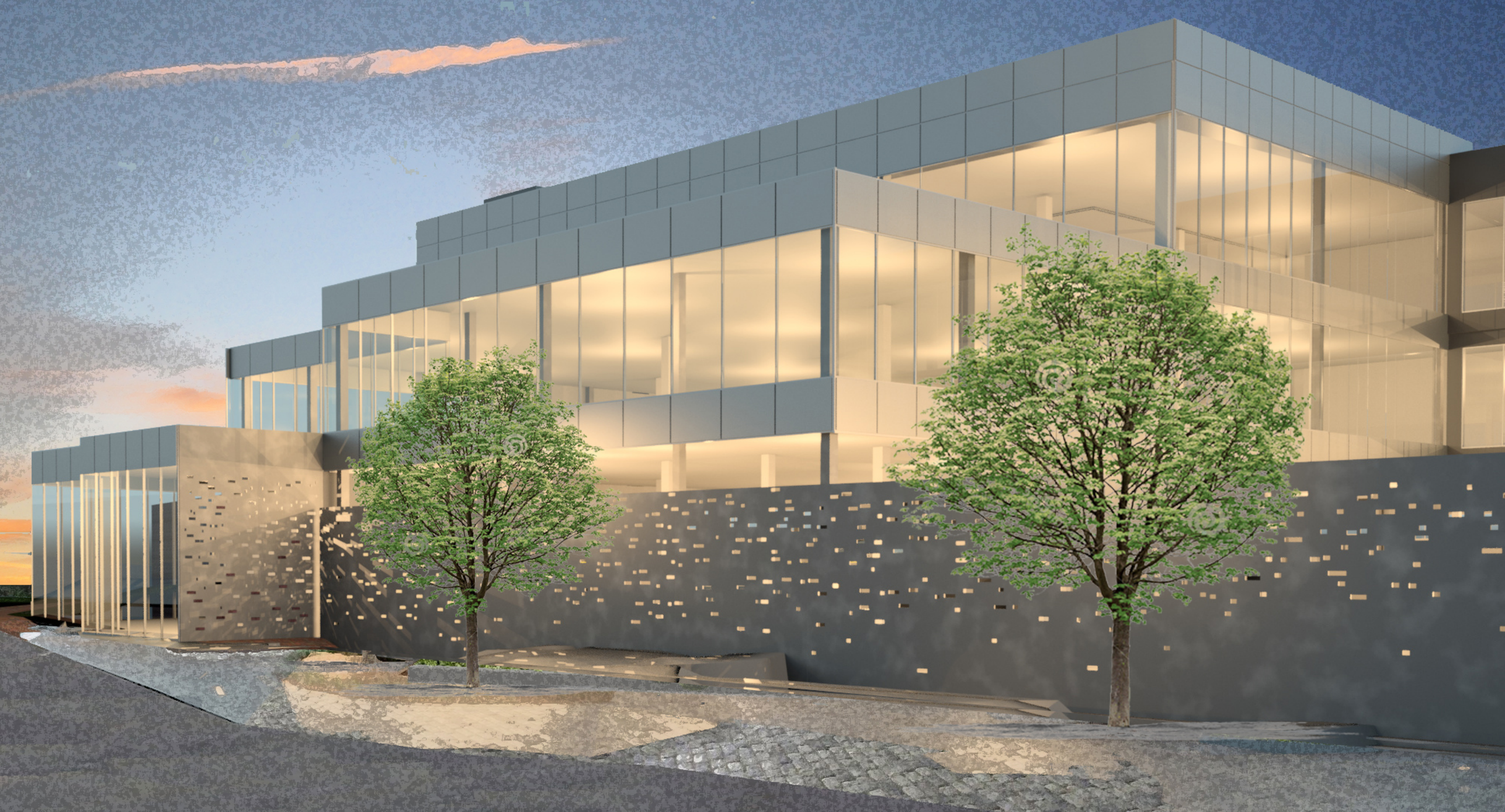





SIGNAGE

PLANNING BOARD REPORT
PORTLAND, MAINE

Seabreeze Property Services Facility, 250 Riverside Industrial Parkway

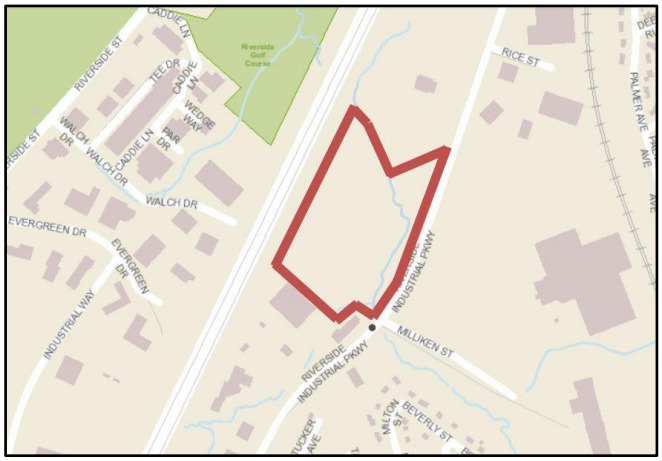
Level III Site Plan and Site Location of Development (SLODA)

Project: # PL000247-2018
Applicant: Two Eisenhower Drive, LLC
CBL: 330A B004

Submitted to: Portland Planning Board Public Hearing Date: January 8th, 2019	Prepared by: Jean Fraser, Planner Date: January 4th, 2019

I. INTRODUCTION

Sebago Technics Inc, on behalf of Two Eisenhower Drive, LLC, requests a final Level III Site Plan and Site Location of Development (SLODA) review for a new two story building of 11,200 sq ft footprint (total of 14,770 sq ft floorspace) located on a 12.4 acre undeveloped site on the west side of Riverside Industrial Parkway. The project is for the new Seabreeze property services facility, which will replace their current facility on Presumpscot Street. The site is located in the IM (Moderate Impact Industrial) Zone.





The proposals include the construction of a new entry drive from Riverside Industrial Parkway of approximately 300 linear feet in length, along with areas for visitor, employee and fleet vehicle parking, materials storage, and snow storage. Three underdrained soil filters are proposed to address stormwater management and quality.

The total disturbed area is approximately 5.15 acres, of which 3.36 acres is proposed to be paved or gravel for parking, circulation and outdoor material storage.

The proposals will impact about 7000 sq ft of fresh water wetland, and will include a bridge over the un-named stream running through the site that is a tributary of Dole Brook (Urban Impaired Stream).

The project was considered by the Planning Board at a Workshop on October 23, 2018 where the sidewalk waiver was discussed and assurances, direct from Seabreeze, were requested regarding future management and avoidance of pollution from the stored materials.

Applicant: Two Eisenhower Drive, LLC
Consultants: Engineering: Sebago Technics, Inc
Building Design: PATCO

II. REQUIRED REVIEWS

Review	Applicable Standards
Site Plan	Section 14-526 City's land Use Code
Site Location of Development (delegated from State)	Section 14-Technical Manual and State Regulations
(the project also requires MDEP NRPA Permits for the wetland fill and stream crossing)	

III. REQUESTED WAIVERS (See submitted Waiver Table and justification in Attachment 06)

The applicant requested a number of waivers from standard site plan ordinance submission requirements and standards. Staff recommend that the technical submission requirements (eg regarding lighting and HVAC) be addressed during the construction phase.

The following table summarizes the staff recommendations regarding waivers from site plan standards:

Waiver Request	Applicable Standards
Curbing: Waiver requested for the curbing along Riverside Industrial Parkway, based on the fact that two of the curbing waiver criteria apply, namely: *4. Strict adherence to the curb requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value.* *5. Runoff from the development site or within the street does not require curbing for stormwater management.*	Site Plan 14-526 (a) 2 c. requires curbing along the ROW unless waiver criteria are met. Staff recommend this waiver and welcome the applicants introduction of a bituminous sidewalk all along the long frontage with Riverside Industrial Parkway.
Parking Lot Landscape Requirement: Waiver requested from all of the ordinance requirements as islands would impede access for vehicles with trailers.	Site Plan 14-526 (b) 2 b *Site Landscaping* requires buffer planting, parking lot landscaping and street trees. Staff do not support a waiver for planting around the parking area because of the previous site clearance and the City Arborist has recommended planting groups of native trees around the outer edge so that snow storage is still possible between the groups (see comments in Attachment C).

IV. PROJECT DATA

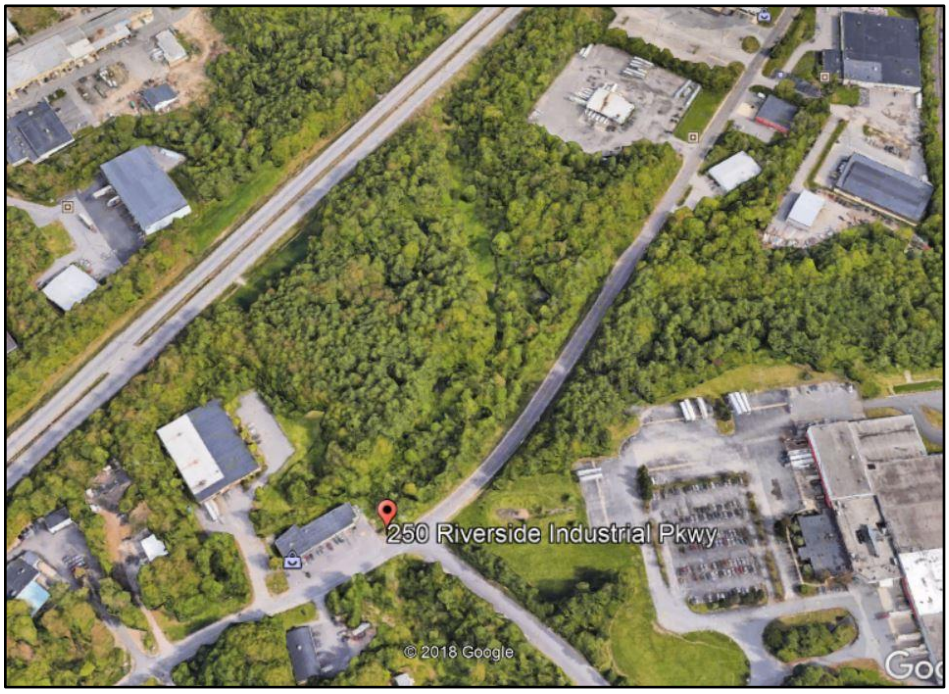
Existing Zoning	IM		
Existing Use	Vacant, with mature vegetation, wetlands and un-named stream		
Proposed Use	Property Services Facility (Seabreeze) (commercial/industrial/warehousing)		
Parcel Size	12.4 acres (includes small parking area for abutting building in same ownership)		
Proposed building	11,200 sq ft footprint; 14,720 sq ft floorspace		
	Existing	*Proposed*	*Net Change*
Wetlands	2.03 acres (88,427 sq ft)	81,577 sq ft	(6,850 sq ft) (subject of NRPA application
Impervious Surface Area	.28 acres	3.36 acres	3.08 acres
Parking Spaces (on site)	Approx. 24 in existing parking area serving abutting site	(24 existing retained) 26 paved and striped 24 gravel employee spaces to double as company vehicle parking spaces	(24 existing retained) +50 spaces
Bicycle Parking Spaces	0	10	10
Estimated Cost of Project	$800,000		

V. EXISTING CONDITIONS

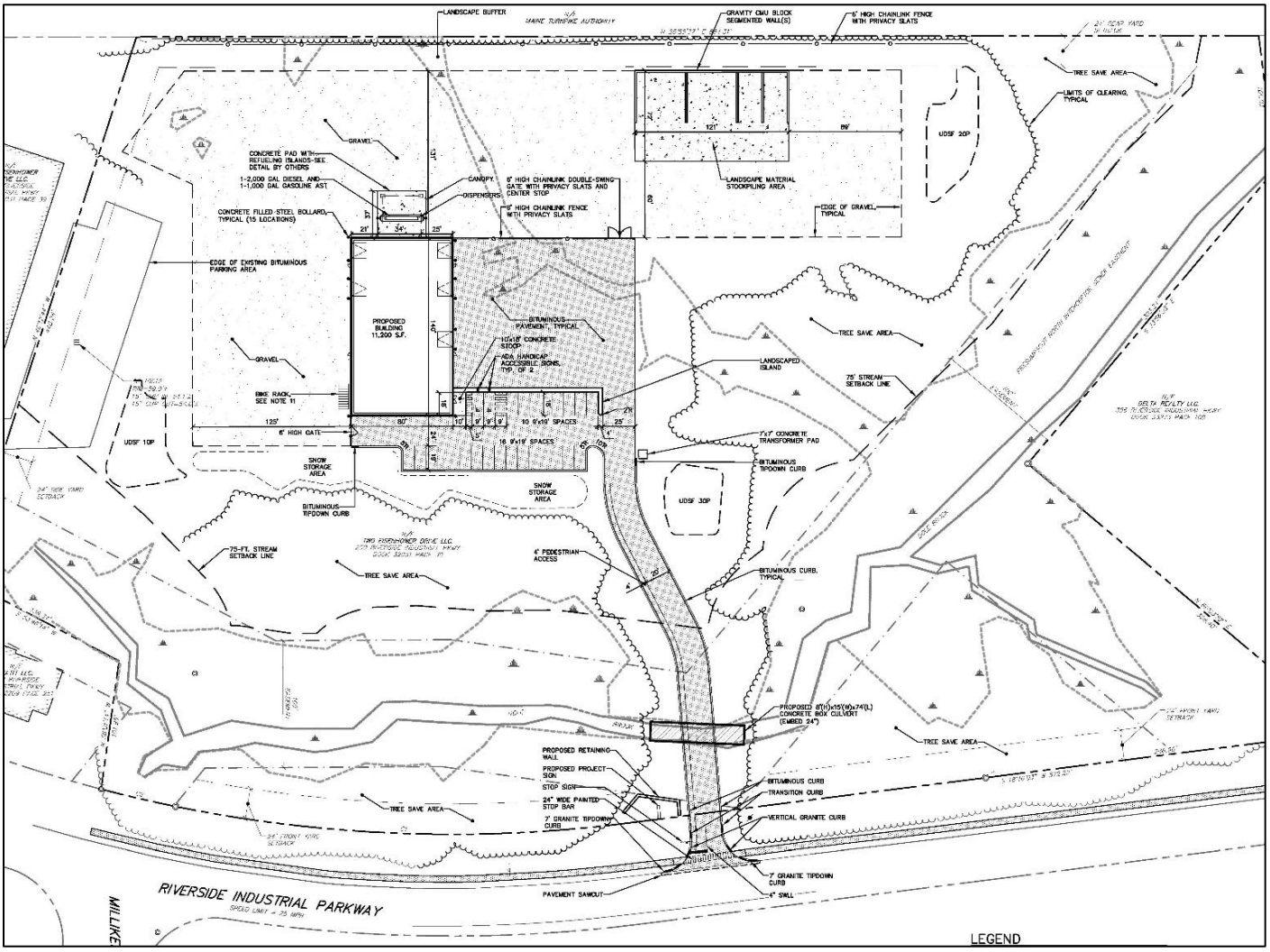
The proposed site is mostly wooded, with an existing paved parking lot just inside the south boundary that serves the abutting lot (in the same ownership as the applicant). Some clearance has taken place since the aerial photo (at right) was taken.

There is a stream running roughly from the northwest of the site to the southwest, and the majority of the wetlands on the site are associated with this stream. The stream is a tributary of Dole Brook, an Urban Imparied Stream.

The site is bounded by the I-95 to the west and Riverside Industrial Parkway to the east, and surrounded by other large scale industrial / commercial premises.



VI. PROPOSED DEVELOPMENT - see Site Plan below and at Plan 03



The revised proposals include:

- New 24 foot wide paved drive access from Riverside Industrial Parkway, with underground utilities alongside
- A 4 foot wide delineated pedestrian walkway located within the paved drive access
- New 2-story building of 11,200 sq ft footprint and 14,720 sq ft floorspace (elevations/floor plans in Plans 13, 14 and 15)
- Large graveled area around the back and south side of the new building - part noted (on the Site Plan) for parking of employee and fleet vehicles, and part for the storage of landscape materials (it is understood that no salt would be stored, but fertilizer and pesticides may be stored on the site)
- Smaller bituminous paved area immediately to the north of the new building
- Specified visitor parking for 26 cars with a revised layout that includes a narrow planted separation from the abutting circulation areas
- Three underdrained soil filters
- Fueling area (one tank gasoline and one tank diesel)
- Buffer planting along part of the boundary with the Maine Turnpike (inside chain link fence immediately abutting the Turnpike)
- Small area of landscaping around sign location at entrance
- Treesave areas identified

The proposals involved the following impacts:

- Wetland fill of about 7000 sq ft- see NRPA Permit application (Att 37) and the fill areas are shown on the Grading and Erosion Control Plan (Plan 05)
- Culverting of the stream to allow for the access drive bridge over
- Areas of extensive regrading to create the three underdrained soil filters, to create level areas around the building and to minimize impacts on wetland

VII. PLANNING BOARD WORKSHOP SUMMARY - October 23, 2018

The Planning Board offered the following comments:

- The Board noted the DPW comments about previous Seabreeze environmental management issues, and sought assurance direct from Seabreeze regarding how future management would ensure there was no repeat at this new site, especially given the fuels and materials to be stored;
- Buffering was needed along the Turnpike, plus other landscaping to address the City Arborist comments;
- The Sidewalk waiver was questioned and the applicant was requested to provide further information regarding the scope for a trail as a substitute, and the cost of providing a bituminous sidewalk.

The final plans include a sidewalk along Riverside Industrial Parkway and partially address the City Arborist comments. It is understood further information regarding future management will be presented at the Hearing.

VIII. PUBLIC COMMENTS

A total of 56 notices of this hearing were sent to property owners within 500 feet of the site, and a legal ad ran in the December 29th and 30th, 2018 editions of the *Portland Press Herald*. The applicant held a Neighborhood Meeting on October 18, 2018 attended by one neighbor; notes are included at Attachment 39. The neighbor who attended the Neighborhood meeting recently contacted the Planning office to confirm that he was supportive of the project. No members of the public spoke at the Planning Board Workshop.

IX. STAFF REVIEW

A. RIGHT, TITLE AND INTEREST

The applicant has demonstrated right, title and interest through the submission of a deed dating from 2015 (Attachment 02). The subject lot includes the parking area that serves the abutting lot (in same ownership but which could be sold in future). Staff have requested (and the applicant has confirmed) that the area of the parking be the subject of a permanent easement to ensure that the abutting lot remains in compliance with zoning requirements for parking, and the Motion presented to the Board includes a suggested condition of approval to this effect.

B. ZONING ANALYSIS

The proposed use fits into the description of "*Building Contractors and Construction and Engineering Services*" as a permitted use in the IM zone. The proposals meet the dimensional standards, though the large extent of impervious surface meets the standard because of the size of the site.

The parking requirement under zoning would be 15 spaces and the applicant has provided 26 on the site plan and noted that a further 24 spaces are located on the gravel area for employee and fleet vehicles. Staff have observed that parking demand is high at the existing facility at Presumpscot Street and support provision above the zoning requirement.

C. SITE LOCATION OF DEVELOPMENT ACT (SLODA) REVIEW (Technical Manual Sec. 14.3. Standards

(Note- Please see submission in Attachment 38, which excludes material that is submitted for site plan to reduce size and duplication)

a. Financial and technical capacity.

Standard: That developer has the financial capacity and technical ability to develop the project in a manner consistent with state environmental standards and with the provisions of Portland's Code of Ordinances. The Planning Board may issue a permit that conditions any site alterations upon a developer providing the Planning Board with evidence that the developer has been granted a line of credit or a loan by a financial institution authorized to do business in this State or with evidence of any other form of financial assurance the Planning Board determines to be adequate. …

Proposal: The applicant has provided a letter dated June 21, 2018 from Biddeford Savings as evidence of financial capacity (Attachment 07).

b. Traffic movement – The applicant submitted a Transportation Analysis (Attachment 09) that predicted a peak hour trip generation of 75 trips based on the existing Seabreeze facility on Presumpscot Street. The analysis assumed that the new facility would generate a similar amount of traffic as the current facility, but the City's Traffic engineering reviewer Tom Errico requested further information regarding the potential future expansion of operations (and associated traffic increases) (Attachment A).

The applicant submitted confirmation that future expansion was not envisaged (Attachment 40) and Mr Errico has confirmed that a TMP is not required for this site (Attachment A). Staff note that the project will be subject to an impact fee at the time of a building permit application, which is estimated to include approximately $14,000 for transportation impacts.

c. No adverse effect on the natural environment

Standard: That the developer has made adequate provision for fitting the development harmoniously into the existing natural environment and that the development will not adversely affect existing uses, scenic character, air quality, water quality or other natural resources in the municipality or in neighboring municipalities. In making a determination under this subsection, the Planning Board shall apply the standards set forth in Chapter 375 of the Maine Department of Environmental Protection Site Law Regulations, as may be amended from time to time.

Proposal: The proposal results in the following effects on the natural environment (see Summary, SLOD and NRPA applicant submissions in Attachments 18, 23, 37, 38, 41-44):

- Wetlands: the NRPA Permit application notes that 6849.5 sq ft of freshwater wetlands will be filled. These wetlands are largely associated with the unnamed stream running through the site and are shown on the Existing Conditions Plan (Plan 02) based on delineation in July 2018.

- Stream crossing: the stream is a tributary of Dole Brook, an urban impaired stream. It is proposed that the stream will be placed in a culvert under the new access drive and the design of this proposal has been revised to address the preliminary comments included in the Workshop Memo. It will require MDEP and Army Corps of Engineers approval.

- Stream in watershed of Urban Impaired Stream: The applicant has provided calculations in Attachment 44 to support the contribution of $44,260.22 to the City's Compensation Fee Utilization Plan for Urban Impaired Streams.

- Water Quality: The potential for pollution from this site relates to the storage of many fleet vehicles, the fueling station, and storage of landscape materials possibly including compost, fertilizer and other chemicals. The proposed grading directs all of the stormwater from the developed area into the soil filters to provide water quality treatment. The DPW comments for the Workshop (Attachment D) identified the requirement for a Multi-Sector General Permit (MSGP) for Industrial Stormwater Discharge Associated With Industrial Activity and a Stormwater Pollution Prevention Plan (SWPPP) , both of which would need to be reviewed and approved by the MDEP. The applicant has confirmed that they have and will be working with St. Germain Collins to prepare the applications, and that the detail of the fueling station has been revised per their advice (Att. 43.).

- Wooded areas: The proposal results in the loss of about 5.5 acres of existing woodland located on the western part of the site adjacent to the I-95. A chain link fence surrounds the site immediately adjacent to the Turnpike Authority land. The proposals now include identified treesave areas and new buffer planting along I-95, and a suggested condition requires the treesave areas to be identified and protected during construction.

- Bats: The correspondence with the Maine Department of Inland Fisheries and Wildlife (Attachment 18) concludes there is one threatened species of bats on the project site. The applicant has stated that no tree removal will take place during the bat pup rearing season and updated the construction management plan and schedule to reflect this requirement.

The submissions and permit requirements outlined above are reflected in the suggested conditions of approval.

d. Soil types
Standard: – That the applicant to provide a map and analysis indicating the location of various soil types on-site, and suitability of such soils and ledge to support the proposed site improvements.

Proposal: The application has submitted this information.

e. Ground Water - In making a determination under this subsection, the Planning Board shall apply the standards set forth in Chapter 500 and 502 of the Maine Department of Environmental Stormwater Management and Direct Watersheds of Waterbodies Most at Risk from New Development Rules as may be amended from time to time. See g. below.

f. Infrastructure.
Standard: That the developer has made adequate provision of utilities, including water supplies, sewerage facilities, solid waste disposal and roadways required for the development and the development will not have an unreasonable adverse effect on the existing or proposed utilities and roadways in the municipality or area served by those services.

Proposal: The proposals as outlined in the site plan and SLOD submissions includes new infrastructure. These are generally acceptable subject to several minor issues that are discussed below under Site Plan review.

g. Flooding and Storm water management, erosion, and sedimentation control.
Standards:

- The activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties nor create an unreasonable flood hazard to any structure. In making a determination under this subsection, the Planning Board shall apply the standards set forth in Chapter 500 and 502

of the Maine Department of Environmental Stormwater Management and Direct Watersheds of Waterbodies Most at Risk from New Development Rules as may be amended from time to time.

- The proposed development meets the standards for storm water management in 38 MRSA §420-D as amended from time to time (See Exhibit 1) and the standard for erosion and sedimentation control in 38 MRSA §420-C as amended from time to time. In making a determination under this subsection, the Planning Board shall apply the standards set forth in Chapter 500 and 502 of the Maine Department of Environmental Stormwater Management and Direct Watersheds of Waterbodies Most at Risk from New Development Rules, as may be amended from time to time.

Proposals: the applicant has submitted a Stormwater Report (Attachment 23), associated plans (Plans 05,06,07,08,09,11 and 12) and a Response to comments (Attachment 44) which detail the three underdrained soil filters and associated grading for these and to minimize impacts on the wetland. The City's Peer Engineer Reviewer Lauren Swett of Woodard & Curran provided detailed comments at the Workshop which have been addressed except for the comment that the landscape plan and grading plan are inconsistent regarding the location of rip rap and loam/seeding. The final plans do not include all of the final stormwater system details and Ms Swett has recommended the drawings be updated to include this information (Attachment B).

C. SITE PLAN REVIEW

The proposals were reviewed by staff for conformance with the relevant review standards of the City of Portland's site plan ordinance.

1. Transportation Standards

a. Impact on Surrounding Street Systems (see above under SLOD Review, ***b***)

b. Access and Circulation and c. Loading and Servicing

The plans are considered to be acceptable.

c. Sidewalks

The applicant originally requested a waiver from the site plan requirement to provide sidewalks along all frontages (ie along Riverside Industrial Parkway, see photo right) (Attachment 06). Staff had recommended in the PB memo that a sidewalk be provided, and at the Workshop the Board requested further information from the applicant.

Riverside Industrial Parkway looking north



The issue has been resolved as the final proposals have incorporated a 5 foot wide bituminous sidewalk set back 5 feet from the roadway all along the Riverside Industrial Parkway frontage.

The applicant has also requested a waiver from the provision of curbing along this stretch of Riverside Industrial Parkway, citing the waiver criteria 4 and 5 from the "*Curbing*" list below.

Curbing-

1. *The cost to construct the curbing, including any applicable street opening fees, is in excess of 5% of the overall project cost.*
2. *The reconstruction of the street is specifically identified and approved in the first or second year of the current Capital Improvement Program or has been funded through an earlier CIP or through other sources.*
3. *The street has been rehabilitated without curbing in the last 60 months.*
4. *Strict adherence to the curb requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value.*
5. *Runoff from the development site or within the street does not require curbing for stormwater management.*

Staff support the waiver from the curbing as two of the criteria have been met, namely 4 and 5.

The site plan ordinance requires a **walkway** between the sidewalk and the entrance to the new building and the applicant has proposed that 4 feet of the new access drive be dedicated for a pedestrian walkway. This would leave a 20 foot wide travel way which is considered acceptable. The City's Traffic Engineering reviewer Tom Errico supports this proposal in principle, subject to a recommended condition requiring road markings that clarify it is pedestrian priority in the walkway area (Attachment A):

> ***Status:*** *The Applicant is proposing an at-grade 4-foot walkway adjacent to a 20-foot travel way. I find this condition to be acceptable given topography, environment resource constraints, and land use type. I would suggest that a 6" white line separate the walkway from travel way and that pedestrian symbol markings be provided (with a 75-foot +/- separation). I would also suggest that the Applicant confirm that guard rail protection (for both vehicles and pedestrians) is not required given steep side slopes.*

d. Public Transit Access - this standard does not apply.

e. Parking

As noted above, the proposals show 26 parking spaces generally for visitors, and note that a further 24 will be available in the gravel area around the new building for employees and fleet vehicles (Site Plan 03). The zoning requirement is 15 parking spaces but staff are aware that with the employee parking and fleet vehicles the parking requirement for this facility would be substantially higher. The applicant has explained (Attachment 41) that the proposals envisage multi use of the non-striped parking area so that the fleet vehicle and the employee using that vehicle are effectively sharing a space.

f. Bicycle parking - this standard has been met.

g. ***TDM -*** this standard does not apply

h. Construction Management Plan - The Construction Management Plan has been revised to address the preliminary review comments and is acceptable. Conditions to reinforce the protection of the natural resources on the site during construction have been included in the motion for the Boards consideration.

2. Environmental Quality Standards

a. ***Preservation of Significant Natural Features -*** covered by the SLODA review above.

b. ***Landscaping and Landscape Preservation, including buffering, parking lot landscaping and street trees***

- Street Trees and Tree Preservation: The applicant has proposed to meet the street tree requirement by identifying Treesaves near Riverside Industrial Parkway (Plan 03). It appears that some clearance has taken place on the site since the Existing Conditions Plan was prepared, so if trees have been or are removed from these identified Treesave areas near the Parkway, they should be replaced with new trees of a similar species. A suggested condition requires marking and protection of the trees within the treesave areas during construction.

- Landscape buffer: The site plan standards refer to buffering along the property boundary and along public streets. The large gravel area (several acres) to the west of the site does not have any buffering and includes a chain link fence for part of the boundary with the Turnpike Authority land. The Workshop Memo recommended that the fence be relocated with buffer planting outside of the fence and along that boundary. The final proposals include buffer planting but it is located within the fence along the Turnpike.

  The City Arborist has commented (Attachment C):

- *Maine Turnpike buffer - The entire width of the site should be included in the planting plan.*
- *There appears to be a few gaps on both the Southern and Northern edge of the site.*
- *The number of trees should be acceptable perhaps the spacing could be stretched out over thelength of the site.*
- *The buffer as proposed consists of a mix of White Pine, Serbian Spruce and River Birch, all of which are acceptable plants. A preferred approach would have been to present a more naturalized planting plan given the rural character of the land. This approach could be less costly using a mix of medium sized plants 6-7' H with smaller 5-6' H and 4-5' H plants that would appear to be naturally growing.*



The recommended conditions of approval require the proposed buffer to be revised to locate planting on the Turnpike side of the chain link fence and to address the City Arborist comments above.

c. Parking lot landscaping: At the Workshop staff recommended that that the standards for parking lot landscaping should be met, including the introduction of islands or other physical separation between the parking area and the drive aisle into the rear yard, and between the parking spaces and the apron near the building. The final proposals have added a narrow vegetated separation between the parking area and the nearby circulation area, but have not introduced landscape in or around the striped parking area nor in the area nearby (identified for snow storage) which will be cleared due to grading requirements.

The City Arborist has commented (Attachment C):

> *The parking lot landscape standard goal should include planting a groups of native shade trees, Red Maple, River Birch or other types, planted near the parking lot edge. The suggestion to plant the trees in groups would allow ample room for snow clearing. The large gravel parking lot could benefit from planting trees on the regraded slope outside the fence. These could be smaller sized White Pine and Red Maple stock for example.*

The suggested conditions of approval include a condition requiring that the planting be revised to address the City Arborist recommendations.

c. Water Quality/Storm Water Management/Erosion Control – covered by SLODA review above.

3. Public Infrastructure and Community Safety Standards

a. Consistency with City Master Plans

At the Workshop the Peer Engineer raised a concern regarding the feasibility of the proposed connection to the City's existing sewer. The final plans remain a concern as noted in Ms Swett's final comments (Attachment B):

> *The Applicant has updated their sewer design, and will be tying directly into the existing City sewer manhole 1083. The invert of the connection to this manhole is not provided on the plan. The Applicant has also noted in their latest response that the existing sewer manhole will be brought to grade and the proposed surrounding slope will be stabilized per their geotechnical consultant's recommendations. The Applicant is still waiting for their ability to serve confirmation from the City, and in addition to the capacity requirements, they should confirm that the modification to the City's existing sewer manhole will be acceptable.*

Since these comments were submitted the Wastewater Capacity letter has been received (Attachment 26).

b. Public Safety (CPTED) and Fire Prevention

The Fire Department does not have any concerns regarding this project.

c. Availability and Adequate Capacity of Public Utilities

The Water District has confirmed the water capacity is adequate, and the Wastewater capacity letter has been received (Attachment 26).

4. *Site Design Standards* (as applicable)

a. Exterior Lighting

The Response to comments (Attachment 41) outline that lighting will be provided at the drive entrance, on the building and for the parking area at the front of the building. Staff do not have a standard by which to assess the proposals as the use is somewhat unusual. The details of the light fixtures are the subject of a suggested condition of approval.

b. ***Noise/vibration/HVAC Equipment -*** the applicant has requested to defer this review and staff support that request. A suggested condition of approval requires the submission of this information for review and approval prior to the issuance of a CO.

c. Signage and Wayfinding - One sign is proposed near the entrance onto Riverside Industrial Parkway and that would require a separate sign permit.

X. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board approve the proposed Seabreeze Property Services Facility at250 Riverside Industrial Parkway. The applicant has modified the proposal significantly to address the site plan and SLODA standards.

XI. PROPOSED MOTIONS

A. WAIVER

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on January 8th, 2019 for application # PL000247-2018 (250 Riverside Industrial Parkway) relevant to the Site Plan Standards of the Land Use Code and Portland's Technical and Design Standards, and other regulations, and the testimony presented at the Planning Board hearing:

1. Curbing Waiver

The Planning Board finds that two of the following waiver criteria **do/do not** apply, (namely 4 and 5 as noted below) and therefore **waives/does not waive** the requirement under Site Plan 14-526 (a) 2 c. for curbing along the proposed sidewalk.

CURBING WAIVER CRITERIA:

4. Strict adherence to the curb requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value.

5. Runoff from the development site or within the street does not require curbing for stormwater management.

B. DEVELOPMENT REVIEW AND SITE LOCATION OF DEVELOPMENT

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on January 8th, 2019 for application # PL000247-2018 (250 Riverside Industrial Parkway) relevant to the Site Plan and Site Location of Development Act (SLOD) regulations; and the testimony presented at the Planning Board hearing; the Planning Board finds that the plan [**is/is not]** in conformance with the Site Plan and Site Location of Development Act (SLOD) standards, subject to the following conditions of approval:

Prior to Applying for a Building Permit

1. That the applicant shall address the comments of the Peer Engineer Lauren Swett, dated January 3, 2019, regarding stormwater management and infrastructure details.

2. That the applicant shall revise the site plan/landscape plan to amend the following details for review and approval by the Planning Authority:
    a. Relocate the chain link fence along the I95 so that it is within the buffer planting, and amend the buffer planting to address the comments of the City Arborist Jeff Tarling dated January 3, 2019; and
    b. Revise the landscape in and around the parking are at the front of the building to address the City Arborist Jeff Tarling comments dated January 3, 2019; and
    c. Delineate pedestrian walkway in accordance with the recommendation of the City's Traffic Engineer Tom Errico dated January 3, 2019; and
    d. Reconcile the location of riprap and loam/seeding where there is inconsistency between plans; and
    e. Consider the installation of guardrails where steep slopes abut the pedestrian walkway/vehicle drive between the ROW and the new facility, and document that the final guardrail proposals meet safety standards.

Prior to Issuance of a Building Permit

3. That the applicant shall contribute $44,260.22 to the City's Compensation Fee Utilization Plan for Urban Impaired Streams.

4. That the applicant shall submit copies of the MDEP NRPA and Army Corps of Engineer permits.

5. That the final stormwater maintenance agreement shall be submitted for review and approval by the Planning Authority and then recorded, with a copy to the Planning Authority and the Department of Public Works.

6. That the applicant shall submit a copy of the recorded permanent easement that documents that the existing parking area near the southern boundary is to be dedicated for use by the abutting lot.

Prior to the commencement of any work on the site including tree clearance

7. That no work shall be undertaken until a Pre-Construction meeting has been held, and that as part of that meeting the applicant and contractor shall confirm the construction schedule, including the timing of the tree clearance to avoid impacts on the threatened bats on the site.

8. That prior to the Pre-Construction meeting the treesave areas and areas of clearance shall be flagged by a surveyor to be consistent with the approved plans, and the contractor shall confirm the measures will be taken to protect treesave areas during construction. Where trees in the treesave areas have already been cleared since the plans presented in this report, replacement planting is required as advised by the City Arborist.

During construction

9. That the applicant and contractor shall notify the Planning Authority Development Review Coordinator two weeks prior to the start of any construction on the stream culvert and stream crossing.

10. That the stormwater installation shall be supervised by an independent "third party" engineer and reports submitted as required under Chapter 500.

Prior to the issuance of a Certificate of Occupancy (CO)

11. That the detailed locations and specification for all exterior and building mounted lighting shall be submitted for review and approval.

12. That separate permits from the Permitting and Inspection Department are required for all new signs, including those on the building, and for HVAC systems, which require submission of dBA levels to confirm compliance with the maximum sound limits of the ordinance.

13. That the applicant shall submit the Multi-Sector General Permit (MSGP) for Industrial Stormwater Discharge Associated With Industrial Activity, and Stormwater Pollution Prevention Plan (SWPPP), to the State MDEP with a copy to the Planning Authority and Department of Public Works at the same time, with a copy of the final MDEP approval submitted to the Planning Authority prior to the CO.

Ongoing

14. That the developer/contractor/subcontractor must comply with conditions of the construction stormwater management plan and sediment and erosion control plan dated September 2018 prepared by Northeast Civil Solutions and based on City standards and state guidelines. The owner/operator of the approved stormwater management system and all assigns shall comply with the conditions of Chapter 32 Stormwater including Article III, Post Construction Stormwater Management, which specifies the annual inspections and reporting requirements.

15. That the project shall be built and maintained as shown in the approved site plans, including the parking provision which is confirmed as acceptable. Any alterations, particularly regarding the extent of the impervious surface area and the removal of trees within the treesave areas, are prohibited unless expressly approved as an amendment with associated analysis of compliance with review standards.

ATTACHMENTS:

PB REPORT ATTACHMENTS

A. Traffic Engineer Final comments 1.3.2019
B. Peer Engineer Final comments 1.3.2019
C. City Arborist Final comments 1.3.2019
D. DPW Water Resources comments from Workshop

PUBLIC COMMENT (none)

APPLICANT'S SUBMITTALS

01-Cover ltr and Application
02-Right, Title, Interest
03-State+Federal Permits
04-Zoning Assessment
05-Exist.Prop Easements
06-Waiver Table.11x17
07-Financial Capability
08-Technical Capability
09-Transportation Analysis-Traffic Impact
10-Access & Circulation
11-Loading+Servicing
12-Sidewalks
13-Public Transit
14-Off-street Parking
15-Bicycle Parking
16-Snow Storage
17-Traffic Demand Mngmt
18-Pres of Sig Natural Features
19-Landscaping+Lighting Pres
20-Site Landscaping
21-Parking Lot Landscaping
22-Street Trees
23-WaterQual, SWtrMngmt, ESC
24-Consistency with City MstrPlan
25-Public Safety and Fire Prevention
26-Utility Capacity
27-Mass, Ventilation, Wind Impact
28-Shadows
29-Snow Ice Loading
30-View Corridor
31-Historic Resource
32-Exterior Lighting
33-Noise+Vibration
34-Signage Wayfinding
35-ZoneRelated Design Stds
36-Construction Management Plan revised for final
37- NRPA Permit application
38-SLOD applic. w-o duplicates of SP submissions
39-Neighborhood Meeting Docs 10.18.18
40-Further traffic info TMP 11.13.18
41- Planning Memo Responses 12.11.18 for final
42-City Arborist Response 12.11.18 for final
43-Water Resources Response 12.11.18 for final
44-Peer Eng comment Response12.24.18

PLANS

01a Boundary.ECJordanCompPlan.PB108
01b COVER SHEET
02 EXISTING CONDITIONS PLAN
03 SITE PLAN
04 UTILITY PLAN
05 GRADING AND EROSION CONTROL P
06 POND CONSTRUCTION PLANS
07 DETAILS
08 DETAILS
09 DETAILS
10 LANDSCAPING PLAN
11 PRE-DEVELOPMENT PLAN
12 POST-DEVELOPMENT WATERSHED PL
13 1st floor plan
14 2nd floor plan
15 Elevations

 Att. A

Portland Maine | Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

250 Riverside Industrial Parkway - Final Traffic Comments

1 message

Tom Errico <thomas.errico@tylin.com> Thu, Jan 3, 2019 at 9:57 AM
To: Jean Fraser <jf@portlandmaine.gov>
Cc: Keith Gray <kgray@portlandmaine.gov>, Bruce Hyman <bhyman@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>

Hi Jean – I have reviewed the application materials and offer the following final traffic comments as a status update of prior comments.

- The Applicant has conducted a trip generation estimate for the project and moderate traffic is expected to be generated by the project during peak hours. The estimate was based upon a count at the existing Presumpscot Street site. I continue to review the methods used and information provided. The Applicant shall provide information regarding future expansion of operations and possible increases in traffic (versus the Presumpscot Street site). I would note a Traffic Impact Study may be required. I will also be confirming the requirement for a Traffic Movement Permit.

Status: The Applicant has provided the requested information and the project does not require a Traffic Movement Permit. I have no further comment.

- The Applicant conducted sight distance measurements at the proposed driveway. Acceptable sight will be provided.

Status: I have no further comment.

- The Applicant conducted waiver analyses for provision of sidewalk and curbing on Riverside Industrial Parkway. In my professional opinion the project does not meet the necessary criteria for pedestrian activity along Riverside Industrial Parkway and loss of significant site features. Accordingly, a sidewalk shall be provided. A curbing waiver may be a consideration with a sidewalk set back from the roadway.

Status: The plans have been revised to include a sidewalk and I have no further comment.

- The Applicant should consider a pedestrian facility between the site and Riverside Industrial Parkway.

Status: The Applicant is proposing an at-grade 4-foot walkway adjacent to a 20-foot travel way. I find this condition to be acceptable given topography, environment resource constraints, and land use type. I would suggest that a 6" white line separate the walkway from travel way and that pedestrian symbol markings be provided (with a 75-foot +/- separation). I would also suggest that the Applicant confirm that guard rail protection (for both vehicles and pedestrians) is not required given steep side slopes.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
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+1.207.781.4721 main
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"One Vision, One Company"

41 Hutchins Drive
Portland, Maine 04102
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T 800.426.4262
T 207.774.2112
F 207.774.6635

Comments 1.3.19

The Applicant has elected to pay a compensation fee for the work in the watershed of an Urban Impaired Stream. The City of Portland has adopted a Compensation Fee Utilization Plan for Urban Impaired Streams, which includes the Dole Brook watershed. The Applicant shall coordinate with the City for the submission of the $44,260.22 fee to the City.

The Applicant has added elevation information to the details on sheet 9, however it appears that the elevation table for the underdrained soil filter detail was omitted. The Applicant has also noted that additional information on the proposed orifices for the underdrained soil filter was provided on the plans, but it is not clear where this information is located. The elevation table or the stormdrain table on the utility plan should reflect inverts and sizes of the proposed orifices. The drawings should be updated to reflect this information.

The Applicant has updated their sewer design, and will be tying directly into the existing City sewer manhole 1083. The invert of the connection to this manhole is not provided on the plan. The Applicant has also noted in their latest response that the existing sewer manhole will be brought to grade and the proposed surrounding slope will be stabilized per their geotechnical consultant's recommendations. The Applicant is still waiting for their ability to serve confirmation from the City, and in addition to the capacity requirements, they should confirm that the modification to the City's existing sewer manhole will be acceptable.

The landscaping plan should be reconciled with the grading plan, as it appears that seeding is identified in areas of rip rap.

The Applicant has acknowledged that a stormwater maintenance agreement with the City of Portland will be required. This will be a condition of approval.

We understand from the Applicant's response, that they are coordinating with the Department of Public Works on the proposed stream crossing culvert. All permit approvals from the Maine Department of Environmental Protection and the Army Corps of Engineers should be provided to the City.

The Applicant should consider the installation of a guard rail along the edge of the proposed driveway, in particular in the area identified for pedestrian access.

COMMITMENT & INTEGRITY
DRIVE RESULTS

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F 207.774.6635

Comments 10.19.18

The Applicant should clarify the amount of wetland impacts. The number varies within the application materials and on the plans.

The SLODA notes that the Maine Construction General Permit will be reviewed as part of the SLODA application. Please note that the SLODA is being reviewed by the City of Portland as part of Delegated Review Authority, and the Maine Construction General Permit will still be required through the Maine DEP.

The project is in the Dole Brook watershed, which is an Urban Impaired Stream. The Applicant should provide additional information on how the project will meet the Urban Impaired Stream Standard.

The standard maximum filter area size for underdrain soil filters, per the Maine DEP BMP standard is 3,000 SF. Two of the proposed filters exceed this area.

The stormwater model includes vertical orifices for the underdrain soil filters ranging in size from 1" to 3.5". The plans and details do not identify these orifices. Please clarify their use, include them in the design details, and specifically identify any maintenance requirements associated with the orifices in the Inspection and Maintenance Plan.

For the final plans, the Underdrained Soil Filter Detail included on sheet 9 should be updated with project-specific elevation information for the project.

It appears based on site grades that there will be some offsite runoff onto the project site, including into Underdrained Soil Filter 2. The plans do not show offsite areas. Please clarify.

Per the City's Technical Manual, where driveways enter onto an existing street, the full radius of the driveway shall be designed and constructed of granite curb. The current design calls for bituminous curbing.

Verify that adequate cover is provided, both for frost protection, and installation of pipes into catch basins. It appears that there is 2.3' of cover at CB-4 and 1.34' of cover at CB-6.

Please clarify how SMH-1 will be tying into the existing sewer that crosses the site within the Presumpscot North Interceptor easement. The structure table notes an invert into this manhole from the proposed site sewer that is almost 17 feet higher than the inverts of the existing sewer. In addition to an ability to serve confirmation, the Applicant will need to provide verification that the connection methodology, and all proposed improvements within the easement are acceptable.

The existing sewer manhole SMH 1083 is located in an area with significant proposed grading with a 1.5:1 sides slope. Additional information should be provided on modifications to this manhole, and any stabilization required to maintain the structure within the steeply sloped area.

Please provide additional information on stabilization fabrics and rip rap sizing, in particular for the area identified with 1.5:1 sizing. Verify that the materials selected for stabilization in these steep areas are adequate for the proposed slopes. The landscape plan should also be reconciled with the grading plan, as it appears that seeding is identified in areas of riprap.

A stormwater maintenance agreement with the City of Portland will be required.

Portland Maine Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

Fwd: 250 Riverside Ind Parkway final Hearing Report being completed tomorrow

1 message

Jean Fraser <jf@portlandmaine.gov> Fri, Jan 4, 2019 at 1:45 AM
To: "Fraser, Jean" <jf@portlandmaine.gov>

CITY ARBORIST COMMENTS

From: **Jeff Tarling** <jst@portlandmaine.gov>
Date: Thu, Jan 3, 2019 at 11:37 AM
Subject: Re: 250 Riverside Ind Parkway final Hearing Report being completed tomorrow
To: Jean Fraser <jf@portlandmaine.gov>

Jean -

Tree & Landscape Review for 250 Riverside Industrial Parkway.

The proposed project at 250 Riverside Industrial Parkway, the future home of Seabreeze Landscape Inc., while setback from the road geographically due to the stream and wetland should still work to meet the parking lot standards more so for environmental reasons then screening. The 250 Riverside Industrial Parkway site was cleared of vegetation prior to the land sale. A goal of the tree & landscape portion of the Site Plan review would be to define the proposed built environment of the project and the spaces that were cleared could be allowed to be restored and transition back to its natural state given the sensitive wetlands nearby.

Recommendations / conditions:

Tree Save - protection measures and delineation should be in place prior to site work. Disturbed areas including grading and detention pond should be allowed to transition to again natural a condition.

The parking lot landscape standard goal should include planting a groups of native shade trees, Red Maple, River Birch or other types, planted near the parking lot edge. The suggestion to plant the trees in groups would allow ample room for snow clearing. The large gravel parking lot could benefit from planting trees on the regraded slope outside the fence. These could be smaller sized White Pine and Red Maple stock for example.

Maine Turnpike buffer - The entire width of the site should be included in the planting plan. There appears to be a few gaps on both the Southern and Northern edge of the site.



The number of trees should be acceptable perhaps the spacing could be stretched out over the length of the site. The buffer as proposed consists of a mix of White Pine, Serbian Spruce and River Birch, all of which are acceptable plants. A preferred approach would have been to present a more naturalized planting plan given the rural character of the land. This approach could be less costly using a mix of medium sized plants 6-7' H with smaller 5-6' H and 4-5' H plants that would appear to be naturally growing.

Jeff

Jeff Tarling
City Arborist - City of Portland Maine
Parks, Recreation & Facilities Department
Forestry & Horticulture
212 Canco Road
Portland, ME. 04103
(207) 808-5446
jst@portlandmaine.gov

Portland Maine Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

Riverside Industrial Parkway / Seabreeze landscape

1 message

Jeff Tarling <jst@portlandmaine.gov> Fri, Oct 19, 2018 at 4:44 PM
To: Jean Fraser <jf@portlandmaine.gov>

Jean -

In review of the proposed project would offer the following recommendations and landscape comments.

The proposed side is near sensitive drainage area that flows into the Presumpscot River eventually. Environmental stewardship and sensibility should be factored in for a site like this, and Seabreeze as one of prominent landscape businesses in greater Portland should be adapt at creating and maintaining this space.

Recommendations and Conditions of approval -

The employee and visitor parking for vendors should be defined and separated from the regular equipment storage area. The equipment and storage area should be defined and fenced considered for security reasons. Material storage areas should be organized and include concrete barriers and paved surface to keep bulk material and site features clean. Winter sand / salt storage should follow industry standards - covered storage away from drainage flows to local streams.

Tree & Landscape - the amount of exposed open, non-vegetated, gravel or paving area for this site is excessive, and likely has operational uses that are less defined on the landscape plan. Areas not intended for immediate use should be transformed into field area to provide vegetated cover.

The area near the front office space should have some degree of landscape treatment as common to commercial buildings, especially a landscape firm. This can include trees and shrubs, native plantings along the edges. The Maine Turnpike edge should contain a treed or vegetated buffer from the highway view.
Gravel wetlands or stormwater features should have naturalized vegetation nearby.

Conditions -

a) Improved tree and landscape plan - additional attention to office area and screening for the Maine Turnpike frontage.

b) Defined equipment and material storage area with paved pads (these features are often standard and may not have been shown on the plan)

c) Sand / salt storage - is it shown? Should be stored in enclosed or contained area.

Jeff Tarling
City Arborist - City of Portland Maine
Parks, Recreation & Facilities Department
Forestry & Horticulture
212 Canco Road
Portland, ME. 04103
(207) 808-5446
jst@portlandmaine.gov

Att. D

Portland Maine Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

Fwd: Water Resources issues re proposed development 250 Riverside Ind Parkway

1 message

Jean Fraser <jf@portlandmaine.gov> Tue, Oct 23, 2018 at 4:38 PM
To: "Fraser, Jean" <jf@portlandmaine.gov>

DPW Preliminay Comments

From: **Benjamin Pearson** <bnp@portlandmaine.gov>
Date: Tue, Oct 23, 2018 at 3:33 PM
Subject: Re: Water Resources issues re proposed development 250 Riverside Ind Parkway
To: Jean Fraser <jf@portlandmaine.gov>
Cc: Doug Roncarati <dar@portlandmaine.gov>

Hi Jean,

Thank you for reaching out. Here are some general comments as I have not see a full plan set:

The facility will likely require a Maine Multi-Sector General Permit (MSGP) for Industrial Stormwater Discharge Associated With Industrial Activity and a Stormwater Pollution Prevention Plan (SWPPP) to help mitigate potential impacts to water quality in Dole Brook and the Presumpscot River. The site is within the Dole Brook Watershed, an Urban Impaired Stream with a ME Water Quality Standard of Class B. The site will also need to meet the UIS Standard under Chapter 500, which can be accomplished through additional stormwater mitigation or through Portland's approved Compensation Fee Utilization Plan for Dole Brook.

Given the proposed use and sensitive nature of this UIS Watershed, material handling needs to be in a controllable manner. At both of Sea Breeze's previous sites, the City has had to deal with multiple issues related to runoff and material leaving the site. This was as recent as summer 2018. Wherever piles of material are going to be stored, appropriate measures need to be in place to manage those materials and runoff from them. Ideally, the materials would be covered. In the same vein, the fuel island needs secondary containment for any spills should be covered with a canopy to prevent spilled fuel from entering into stormwater infrastructure with runoff. Both of these items should be covered under the Industria Stormwater Discharge Permit and Stormwater Prevention Plan required for a site like this as described above.

There should be significant concern about the design of the box culvert, as shown, given the volume of flow in this channel, which is already causing down-cutting and stream bank erosion. The width of the box culvert barely covers the width of the existing stream bed. This could serve as a flow constriction that would increase the velocity and energy of the flow at the culvert outlet which, as it happens, is directed toward the eastern stream bank, because the culvert does not account for the bend in the stream. This design is likely to result in significant scouring and stream bank erosion at the downstream end of the culvert. Furthermore, growth in this area is likely to result in additional runoff and flow to this section of Dole Brook that would exacerbate these problems and result in further degradation of the stream and water quality. The culvert should be widened and account for the nearby bend in the stream to limit scouring and bank erosion.

We can continue this conversation another day as well. Hope I got it to you in time.

Thank you,
Ben

SEBAGO TECHNICS

July 31, 2018
16360

City of Portland Planning Board
Mr. Sean Dundon, Chair
389 Congress Street, 4th Floor
Portland, Maine 04101

Level III Site Plan Application Submittal – Property Services Facility
250 Riverside Industrial Parkway, Portland

Dear Chair Dundon and Planning Board Members:

On behalf of Two Eisenhower Drive, LLC, we have assembled the following Site Plan Submittal for a new property services facility to be located at 250 Riverside Industrial Parkway. We have appreciated the opportunity to correspond with you and others from the City on multiple occasions during the initial phases of the project and permitting process. Over the past few months, the applicant has continued the planning and design of the facility and would like to move forward with the City Planning Board review process. In parallel with the City application, we will begin the Maine DEP review process.

The following narrative provides an overview of the project team and design/facility components.

Project Team:

Owner:	Two Eisenhower Drive, LLC
Building Design:	PATCO
Civil Engineer:	Sebago Technics, Inc.

Project Site:
The project site is located in the City of Portland's Riverton area between Riverside Street and the Maine Turnpike (I-95) with street frontage on Riverside Industrial Parkway. The proposed new entry drive is located approximately 400 feet north of Milliken Drive on the opposite side of the street. This location is opportune for the project given its size and IM Zoning. The project site is approximately 12.4 acres in size and has access to Riverside Industrial Parkway.

Historically, the parcel is primarily wooded and undeveloped with the exception of an existing parking lot to benefit the neighboring business that is under the same ownership. The portion of the site to be developed generally has flatter topography with an unnamed stream that runs approximately parallel to the northeasterly property line. The development area also contains mapped freshwater wetland area that will be impacted by the site development. The unnamed stream is a tributary to Dole Brook which is considered an Urban Impaired stream.

Development Program:
The development program includes a new entry drive from Riverside Industrial Parkway to the building site that will provide employee parking, a large circulation area for fleet vehicles and trailers, deliveries and 14,720 square-foot +/- building (11,200 square-foot footprint) with a private fueling area, landscape materials storage and office and conference space. Additionally, the site will include dedicated snow storage area and a series of under-drained soil filters for stormwater management. In total the disturbed area for development area is approximately 5.15 acres. The entry drive is curbed and is conformance with City standards. Waiver requests from sidewalk/curb along the street frontage, internal walk connection, landscaped parking islands and street trees standards are formally requested.

State and Federal Permits:
The project will require a Maine Department of Environmental Project (Maine DEP) Maine Construction General Permit Application (MCGP), Tier 1 Natural Resourced Protection Act Permit (NRPA) for wetland alteration and NRPA Permit by Rule (PBR) for the stream crossing. In addition, a U.S. Army Corp of Engineers permit, subject to timing requirements, may be required for the project. These applications are being prepared and submitted concurrently with this application.

Utilities:
The project will be served by public water and sewer available from an existing sewer easement on the lot and services extending from Riverside Industrial Parkway. We have been in contact with Portland Water District and the City Sewer Department regarding the proposed site development. Utilities and communication service connections will be coordinated with respective companies.

Lighting:
The project will include LED building mounted full cut-off fixtures within the development area. The light cut sheets are provided. The applicant requests that the Photometric Plan be submitted upon finalization of the proposed lighting design and be considered as a Condition of Approval. See Waiver Table where a temporary submittal waiver is requested.

Landscaping:
The project location is unique since the development area is located on a 12.4-acre tract of land with >900 linear feet of wooded street frontage on Riverside Industrial Parkway. The development area will occur within the interior portion of the lot adjacent to the Maine Turnpike ROW. The southwesterly portion of the site contains a small parking lot to benefit the business on the abutting lot that is under the same ownership. The remaining area of the site is primarily wooded areas and is therefore well buffered. As a result, we are proposing to utilize the existing landscape for buffering retaining perimeter wooded areas to serve as the project landscaping. Waiver requests from curbed landscaped parking islands and street trees are included in this submittal package.

Stormwater Management and Erosion Control:
A stormwater management plan has been prepared to include treatment of runoff to meet Maine DEP and City of Portland requirements. Stormwater from the developed area will be treated through a series of under-drained soil filters.

Traffic:
Sebago Technics, Inc. has completed an assessment of expected trip generation from the project. This information is included for review and consideration. The MaineDOT determines the need for a Traffic Movement Permit (TMP) based on the passenger car equivalent (PCE) trips to be generated by the

proposed development. Based on City standard, the development also does not require a Traffic Impact Study.

Schedule:
The applicant is hopeful to complete the permitting process through the City and Maine DEP by late summer to allow for early autumn start in 2018 and completion in 2019.

Closure:
We look forward to working with the City and Planning/Engineering staff through the permitting process for the proposed property services building to be located on Riverside Industrial Parkway. As always, please contact me if you have any questions or require further information.

Sincerely,

SEBAGO TECHNICS, INC.

William T. Conway, RLA, LEED-AP
Senior Vice President, Landscape Architecture

WTC/skn

enc.

cc: D. Machesney, Two Eisenhower Drive, LLC

I. Project Information (Please enter n/a on those fields that are not applicable)

Project Name:	Two Eisenhower Drive LLC
Proposed Development Address:	250 Riverside Industrial Parkway
Project Description:	New Property Services Facility
Chart/Block/Lot:	330A-B-1, 330A-B-4, 330A-B-11
Preliminary Plan	n/a
Final Plan	Dated: 07/16/2018

II. Contact Information (Please enter n/a on those fields that are not applicable)

APPLICANT

Name:	c/o David Machesney
Business Name:	Two Eisenhower Drive LLC
Address:	P.O. Box 1120
City/State:	Portland, Maine
Zip Code:	04104
Work #:	(207) 854-5056
Home #:	
Cell #:	
Fax #:	
E-mail:	dmachesney@prattabbott.com

OWNER

Name:	Two Eisenhower Drive, LLC
Address:	P.O. Box 1120
City/State:	Portland, Maine
Zip Code:	04104
Work #:	(207) 854-5056
Home #:	
Cell #:	
Fax #:	
E-mail:	dmachesney@prattabbott.com

AGENT/REPRESENTATIVE

Name:	Sebago Technics, Inc. c/o William Conway, Senior V.P. Landscape Architecture
Address:	75 John Roberts Road, Suite 4A
City/State:	South Portland, Maine
Zip Code:	04106
Work #:	(207) 200-2055
Home #:	
Cell #:	
Fax #:	(207) 856-2206
E-mail:	wconway@sebagotechnics.com

BILLING (to whom invoices will be forwarded to)

Name:	Two Eisenhower Drive LLC c/o D. Machesney
Address:	P.O. Box 1120
City/State:	Portland, Maine
Zip Code:	04104
Work #:	(207) 854-5056
Home #:	
Cell #:	
Fax #:	
E-mail:	dmachesney@prattabbott.com

ENGINEER

Name:	Sebago Technics, Inc. c/o Shawn M. Frank, P.E.
Address:	75 John Roberts Road, Suite 4A
City/State:	South Portland, Maine
Zip Code:	04106
Work #:	(207) 200-2062
Home #:	
Cell #:	
Fax #:	(207) 856-2206
E-mail:	sfrank@sebagotechnics.com

SURVEYOR

Name:	Sebago Technics, Inc.
Address:	75 John Roberts Road, Suite 4A
City/State:	South Portland, Maine
Zip Code:	04106
Work #:	(207) 200-2100
Home #:	
Cell #:	
Fax #:	(207) 856-2206
E-mail:	wconway@sebagotechnics.com

~~**ARCHITECT**~~ **BUILDING DESIGNER**

Name:	PATCO, c/o Greg Patterson
Address:	1293 Main Street
City/State:	Sanford, Maine
Zip Code:	04073
Work #:	(207) 324-5574
Home #:	
Cell #:	
Fax #:	
E-mail:	greg@patco.com

ATTORNEY

Name:	
Address:	
City/State:	
Zip Code:	
Work #:	
Home #:	
Cell #:	
Fax #:	
E-mail:	

DESIGNATED PERSON(S) FOR UPLOADING INTO e-PLAN

Name:	Will Conway, Sebago Technics, Inc.
E-mail:	wconway@sebagotechnics.com
Name:	Stefanie Nichols, Sebago Technics, Inc.
E-mail:	snichols@sebagotechnics.com
Name:	
E-mail:	

III. APPLICATION FEES

LEVEL III DEVELOPMENT (check applicable review)

☐	Less than 50,000 sq. ft.	$750.00
☐	50,000 – 100,000 sq. ft.	$1,000.00
☐	100,000 – 200,000 sq. ft.	$2,000.00
☒	200,000 – 300,000 sq. ft.	$3,000.00
☐	Over 300,000 sq. ft.	$5,000.00
☐	Parking lots over 100 spaces	$1,000.00
☐	After-the-fact Review	$1,000.00 + applicable application fee above

PLAN AMENDMENTS (check applicable review)

☐	Planning Staff Review	$250.00
☐	Planning Board Review	$500.00

OTHER REVIEWS (check applicable review)

☐	Traffic Movement	$1,500.00
☒	Stormwater Quality	$250.00
☐	Subdivision	$500.00 + applicable fee for lots/units below
	# of Subdivision Lots/Units [ ] x $25.00 each	$
☒	Site Location	$3,500.00 + applicable fee for lots/units below
	# of Site Location Lots/Units [ ] x $200.00 each	$
☐	Change of Use	
☐	Flood Plain	
☐	Shoreland	
☐	Design Review	
☐	Housing Replacement	
☐	Historic Preservation	
	TOTAL APPLICATION FEE DUE:	$ 6,750.00

IV. FEES ASSESSED AND INVOICED SEPARATELY

- Notices to abutters (receipt of application, workshop and public hearing meetings) ($.75 each)
- Legal Ad in the Newspaper (% of total ad)
- Planning Review ($52.00 hour)
- Legal Review ($75.00 hour)
- Third Party Review (all outside reviews or analysis, eg. Traffic/Peer Engineer, are the responsibility of the applicant and will be assessed and billed separately)

V. PROJECT DATA (Please enter n/a on those fields that are not applicable)

TOTAL AREA OF SITE	540,144	sq. ft.
PROPOSED DISTURBED AREA OF THE SITE	224,296	sq. ft.
If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland.		
IMPERVIOUS SURFACE AREA		
Impervious Area (Total Existing)	12,257	sq. ft.
Impervious Area (Total Proposed)	146,382	sq. ft.
Building Ground Floor Area and Total Floor		
Building Footprint (Total Existing)	n/a	sq. ft.
Building Footprint (Total Proposed)	11,200	sq. ft.
Building Floor Area (Total Existing)	n/a	sq. ft.
Building Floor Area (Total Proposed)	14,720 +/-	sq. ft.
ZONING		
Existing	IM (Industrial)	
Proposed, if applicable	n/a	
LAND USE		
Existing	Undeveloped	
Proposed	Property Services Business	
RESIDENTIAL, IF APPLICABLE		
# of Residential Units (Total Existing)		
# of Residential Units (Total Proposed)		
# of Lots (Total Proposed)		
# of Affordable Housing Units (Total Proposed)		
PROPOSED BEDROOM MIX		
# of Efficiency Units (Total Proposed)		
# of One-Bedroom Units (Total Proposed)		
# of Two-Bedroom Units (Total Proposed)		
# of Three-Bedroom Units (Total Proposed)		
PARKING SPACES		
# of Parking Spaces (Total Existing)	n/a	
# of Parking Spaces (Total Proposed)	50	
# of Handicapped Spaces (Total Proposed)	2	
BICYCLE PARKING SPACES		
# of Bicycle Spaces (Total Existing)	n/a	
# of Bicycle Spaces (Total Proposed)	10	
ESTIMATED COST OF THE PROJECT	$ TBD	

VI. APPLICANT SIGNATURE

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a ***legal signature*** per Maine state law.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level III Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant:	
Date:	07/16/2018

PRELIMINARY PLAN (Optional) - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	**GENERAL WRITTEN SUBMISSIONS CHECKLIST**
		1	Completed Application form
		1	Application fees
		1	Written description of project
		1	Evidence of right, title and interest
		1	Evidence of state and/or federal approvals, if applicable
		1	Written assessment of proposed project's compliance with applicable zoning requirements
		1	Summary of existing and/or proposed easement, covenants, public or private rights-of-way, or other burdens on the site
		1	Written requests for waivers from site plan or technical standards, if applicable.
		1	Evidence of financial and technical capacity
		1	Traffic Analysis (may be preliminary, in nature, during the preliminary plan phase)
Applicant Checklist	Planner Checklist	# of Copies	**SITE PLAN SUBMISSIONS CHECKLIST**
		1	Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
		1	**Preliminary Site Plan including the following: (information provided may be preliminary in nature during preliminary plan phase)**
		Proposed grading and contours;	
		Existing structures with distances from property line;	
		Proposed site layout and dimensions for all proposed structures (including piers, docks or wharves in Shoreland Zone), paved areas, and pedestrian and vehicle access ways;	
		Preliminary design of proposed stormwater management system in accordance with Section 5 of the Technical Manual (note that Portland has a separate applicability section);	
		Preliminary infrastructure improvements;	
		Preliminary Landscape Plan in accordance with Section 4 of the Technical Manual;	
		Location of significant natural features (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features) located on the site as defined in Section 14-526 (b) (1);	
		Proposed buffers and preservation measures for significant natural features, as defined in Section 14-526 (b) (1);	
		Location , dimensions and ownership of easements, public or private rights of way, both existing and proposed;	
		Exterior building elevations.	

FINAL PLAN - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	**GENERAL WRITTEN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)**
X		1	* Completed Application form
X		1	* Application fees
X		1	* Written description of project
X		1	* Evidence of right, title and interest
X		1	* Evidence of state and/or federal permits
X		1	* Written assessment of proposed project's specific compliance with applicable Zoning requirements
X		1	* Summary of existing and/or proposed easements, covenants, public or private rights-of-way, or other burdens on the site
X		1	* Evidence of financial and technical capacity
X		1	Construction Management Plan
X		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
X		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
X		1	Stormwater management plan and stormwater calculations
X		1	Written summary of project's consistency with related city master plans
X		1	Evidence of utility capacity to serve
X		1	Written summary of solid waste generation and proposed management of solid waste
X		1	A code summary referencing NFPA 1 and all Fire Department technical standards
n/a		1	Where applicable, an assessment of the development's consistency with any applicable design standards contained in Section 14-526 and in City of Portland Design Manual
Waiver Request		1	Manufacturer's verification that all proposed HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Applicant Checklist	Planner Checklist	# of Copies	**SITE PLAN SUBMISSIONS CHECKLIST** **(* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)**
X		1	* Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
		1	**Final Site Plans including the following:**
X		Existing and proposed structures, as applicable, and distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone);	
X		Existing and proposed structures on parcels abutting site;	
X		All streets and intersections adjacent to the site and any proposed geometric modifications to those streets or intersections;	
X		Location, dimensions and materials of all existing and proposed driveways, vehicle and pedestrian access ways, and bicycle access ways, with corresponding curb lines;	
X		Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;	
X		Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;	
n/a		Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;	
X		Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;	
X		Location of all snow storage areas and/or a snow removal plan;	
		A traffic control plan as detailed in Section 1 of the Technical Manual;	
X		Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);	
X		Location and proposed alteration to any watercourse;	
X		A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;	
X		Proposed buffers and preservation measures for wetlands;	
X		Existing soil conditions and location of test pits and test borings;	
X		Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;	
X		A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;	
X		Grading plan;	
X		Ground water protection measures;	
X		Existing and proposed sewer mains and connections;	

- Continued on next page -

X		Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
X		Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
X		Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
n/a		Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
X		Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
n/a		A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
n/a		A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
X		Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
n/a		An exterior lighting plan in accordance with Section 12 of the Technical Manual;
X		A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
X		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

A Guide to Holding Neighborhood Meetings
Portland, Maine

Planning and Urban Development Department
Planning Division and Planning Board

In order to improve communication between applicants and neighbors, the City of Portland requires applicants who are proposing certain types of development review projects, to hold a neighborhood meeting.

Developments requiring a neighborhood meeting

- Proposed map amendments, contract zones and zoning text amendments that would result in major development;
- Subdivisions of five or more units or lots;
- Master Development Plans; and
- Level III site plan proposals as defined in Section 14-523.

(The Land Use Code, including Article II (Planning Board) and Article V (Site Plan – which contains the neighborhood meeting requirements), are available on the City's web site at www.portlandmaine.gov/citycode/chapter014.pdf)

Timing of meeting

- **Subdivisions of 5 or more units or lots, zone changes, contract zones, zoning text amendments and Level III site plans:**
  - Preliminary Site Plan - The meeting should be held within 30 calendar days of filing the application.
  - Final Site Plan – If only a final plan is submitted, the meeting should be held within 21 calendar days of filing the application and no less than 7 calendar days before the public hearing.
- **Master Plan Development:**
  - The meeting should be held within 30 calendar days of filing the application.
  - The meeting should be held on a date no less than 7 calendar days before a public workshop or public hearing.
  - The meeting shall not be combined with any required neighborhood meeting for the Level III applications.

Location of meeting

- The meeting should be held in the evening, during the week, at a convenient location within the Portland neighborhood surrounding the proposed site. Community meeting spaces at libraries, schools or other places of assembly are recommended. Neighborhood schools are usually available for evening meetings.
- Meetings should not be held on the same day as scheduled Planning Board or City Council meetings. The City Council generally meets on the 1st and 3rd Monday of each month and the Planning Board generally meets on the 2nd and 4th Tuesday of each month; however additional meetings may be scheduled. An updated schedule may be found on the City's website: www.portlandmaine.gov

Invitation List

- Property owners within 500 feet of the proposed development (1000 feet for proposed industrial subdivisions and industrial zone changes)
- Interested citizens and neighborhood groups.

The Planning Division provides the mailing labels. We require at least 48 hours notice to generate the mailing labels and a charge of $1.00 per sheet will be payable upon receipt of the labels. An electronic version (excel or word format) of the labels can also be e-mailed upon request.

A digital copy of the notice must be provided to the Planning Office (jmy@portlandmaine.gov and ldobson@portlandmaine.gov) and the assigned planner, which will then be forwarded to those on the interested citizen list who receive e-mail notices.

When to Send Invitations

- Invitations must be sent **no less than 10 days (to include weekends)** prior to the neighborhood meeting.
- Notices may be sent by regular mail and do not need to be sent by certified mail.

Notice Description

A recommended invitation format is included in this packet of material.

Attendance Sheet and Meeting Minutes

- Sign-in sheet must be circulated for those in attendance.
- Applicant shall take accurate minutes of the meeting.
- The sign-in sheet and minutes shall be submitted to the Planning Division.

A public hearing will not be scheduled until the meeting minutes and sign-up sheet are submitted to the Planning Division.

A Certification form is included with this packet to be completed and signed by the applicant.

Please call the Planning Division at 874-8721 or 874-8719 if you have any questions.

Attachments

1. Neighborhood Meeting Invitation Format
2. Neighborhood Meeting Certification

EXAMPLE: Neighborhood Meeting Invitation Format

Applicant/Consultant
Letterhead

(Date)

Dear Neighbor:

Please join us for a neighborhood meeting to discuss our plans for a (development proposal) located at (location/number and street address).

Meeting Location: _____
Meeting Date: _____
Meeting Time: _____

(The City code requires that property owners within 500 feet (1000 feet for proposed industrial subdivisions and industrial zone changes) of the proposed development and residents on an "interested parties list", be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board.)

If you have any questions, please call (telephone number of applicant or consultant).

Sincerely,

(Applicant)

Note:
Under Section 14-32(C) and 14-524(a)d of the City Code of Ordinances, an applicant for a Level III development, subdivision of over five lots/units, or zone change is required to hold a neighborhood meeting within 30 days of submitting a preliminary application or 21 days of submitting a final site plan application, if a preliminary plans was not submitted. The neighborhood meeting must be held at least seven days prior to the Planning Board public hearing on the proposal. Should you wish to offer additional comments on this proposed development, you may contact the Planning Division at 874-8721 or send written correspondence to the Planning and Urban Development Department, Planning Division 4th Floor, 389 Congress Street Portland, ME 04101 or by email: to bab@portlandmaine.gov

EXAMPLE: Neighborhood Meeting Certification

I, (applicant/consultant) hereby certify that a neighborhood meeting was held on (date) at (location) at (time).

I also certify that on (date at least ten (10) days prior to the neighborhood meeting), invitations were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division which includes property owners within 500 feet of the proposed development or within 1000 feet of a proposed industrial subdivision or industrial zone change.

2. Residents on the "interested parties" list.

3. A digital copy of the notice was also provided to the Planning Division (jmy@portlandmaine.gov and ldobson@portlandmaine.gov) and the assigned planner to be forwarded to those on the interested citizen list who receive e-mail notices.

Signed,

_____ _____ (date)

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes

Portland, Maine Yes. Life's good here.

Planning & Urban Development Department

LEVEL II and LEVEL III APPLICATION SUBMISSION CHECKLIST

Please submit each document as a separate PDF file.
Please confirm by electronically checking the boxes to the left

General Application Documents

Checklist	Items to be Provided	
Yes NA Plan ✔	PROJECT DESCRIPTION • Cover Letter with detailed project description	00
Yes NA Plan ✔	COMPLETED CHECKLIST – LEVEL III APPLICATION	01
Yes NA Plan ✔	RIGHT, TITLE AND INTEREST • Deeds, leases, or purchase and sales agreements	02
Yes NA Plan ✔	EVIDENCE OF STATE OR FEDERAL APPROVALS, if applicable • Permits or letters of non-jurisdiction, if applicable	03
Yes NA Plan ✔ ✔	ZONING ASSESSMENT • Table listing required and proposed uses and dimensional standards Zoning Assessment Table	04
Yes NA Plan ✔	EXISTING &/OR PROPOSED EASEMENTS OR COVENANTS, if applicable • Evidence of existing easements and any proposed easements	05
Yes NA Plan ✔	WAIVER REQUESTS • Written request for waiver describing request and reason. Waiver Table	06
Yes NA Plan ✔	FINANCIAL CAPABILITY • Letter or evidence from a financial institution or third party verifying financial capacity to undertake project	07
Yes NA Plan ✔	TECHNICAL CAPABILITY • Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects	08

LEVEL II AND LEVEL III SITE PLAN STANDARDS AND SUBMISSION CHECKLIST

Provide assessment of compliance with standards and include supplemental documentation, as applicable.

Please submit each document as a separate PDF file.

TRANSPORTATION

Check list	Assess/Provide/Document:	
Yes NA Plan ✔ ✔ ✔	**Transportation Analysis- Traffic Impact (14-526 (a) 1)** • Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts • Traffic Impact Study (Technical Manual, Section 1) if applicable	09
Yes NA Plan ✔ ✔	**Access and Circulation (14-526 (a) 2 a)** • Access and internal circulation, addressing ADA access • Access and egress impacts on traffic flows • Description and use of drive-up features, if applicable	10
Yes NA Plan ✔	**Loading and Servicing (14-526 (a) 2 b)** • Loading and servicing needs, route and travel way geometrics for deliveries • Turning templates for delivery vehicles, if applicable	11
Yes NA Plan ✔ ✔	**Sidewalks (14-526 (a) 2 c)** • Sidewalks and condition along street frontages and internal walkways • Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)	12
Yes NA Plan ✔	**Public Transit (14-526 (a) 3), if applicable** • Existing available transit services • Proposed site plan design details, such as easement, pad base, and shelter	13
Yes NA Plan ✔ ✔	**Off-Street Parking: Vehicle & Motorcycle/Scooter) (14-526 (a) 4 a and c)** • Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements • Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan	14
Yes NA Plan ✔ ✔	**Bicycle Parking (14-526 (a) 4 b)** • Address bicycle parking requirements and identify locations on-site • Construction details for bike racks (Technical Manual, Section 1)	15
Yes NA Plan ✔ ✔	**Snow Storage (14-526 (a) 4 d)** • Management plan for snow removal and locate snow storage areas on plan	16
Yes NA Plan ✔	**Traffic Demand Management (TDM) (14-526 (a) 5), if applicable** • Develop TDM with Trip Reduction Targets and Strategies	17

ENVIRONMENTAL AND LANDSCAPE FEATURES	
Check list	Assess/Provide/Document:
Yes NA Plan ✔	Preservation of Significant Natural Features (14-526 (b) 1), if applicable 18 • Trees, plants, habitats listed on State or Federal list of endangered or threatened • High and moderate value waterfowl and wading habitat • Aquifers on Casco Bay Islands • Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) • Proposed preservation areas and protection measures • Documentation from environmental consultants, determinations from applicable state agencies
Yes NA Plan ✔	Landscaping and Landscape Preservation (14-526 (b) 2 a) 19 • Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4) • Protection measures of existing vegetation during construction • Protection measures within Shoreland Zone, if applicable
Yes NA Plan ✔ ✔	Site Landscaping (14-526 (b) 2 b) 20 • Screening and buffering of service areas and between non-residential and residential uses • Planting plans with plant schedule and sizes (Technical Manual, Section 4)
Yes NA Plan ✔	Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable 21 • Landscaped islands within parking areas (Technical Manual, Section 4)
Yes NA Plan ✔	Street Trees (14-526 (b) 2 b iii) 22 • Existing Heritage or Feature Trees on site and measures to preserve • Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable

ENVIRONMENTAL AND STORMWATER	
Check list	Assess/Provide/Document:
Yes NA Plan ✔ ✔	Water Quality, Stormwater Management and Erosion Control (14-526 (b) 3 a) 23 • Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable • Erosion control plan and measures • Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable • Subsurface sanitary sewage disposal and groundwater protection

PUBLIC INFRASTRUCTURE AND SAFETY	
Check list	Assess/Provide/Document:
Yes NA Plan ✔	**Consistency with City Master Plans (14-526 (c) 1)** 24 • Identify consistency with master plans • Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes NA Plan ✔	**Public Safety and Fire Prevention (14-526 (c))** 25 • Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3) • Emergency vehicle access • Address consistency with public safety standards (Technical Manual, Section 3) • Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist
Yes NA Plan ✔	**Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9)** 26 • Electrical services, including providing underground services • Identify existing and proposed connections for public utilities and required public utility upgrades • Sewer line connections are required, if there is a main within 200 feet • Proposed solid waste management facilities on-site and management for the site • Written evidence of the ability to serve from utility companies, as applicable

SITE DESIGN	
Check list	Assess/Provide/Document:
Yes NA Plan ✔	**Massing, Ventilations and Wind Impact (14-526 (d) 1)** 27 • Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable • Bulk, location or height impacts on adjoining structures • Identify and locate HVAC equipment and venting away from public spaces and residential properties • Identify screening and manufacturing specifications for noise, if applicable
Yes NA Plan ✔	**Shadows (14-526 (d) 2), if applicable** 28 • Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes NA Plan ✔	**Snow and Ice Loading (14-526 (d) 3)** 29 • Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes NA Plan ✔	**View Corridors (14-526 (d) 4), if applicable** 30 • Protection of designated view corridors (Portland Design Manual, Appendix 1)

Yes	NA	Plan		
✔			**Historic Resources (14-526 (d) 5), if applicable** • Identify developments within Historic Districts or affecting Designated Landmarks • Certificate of Appropriateness or other evidence • Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required • Address preservation and documentation of Archaeological Resources	
Yes	NA	Plan		
✔			**Exterior Lighting (14-526 (d) 6)** • Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12) • Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)	
Yes	NA	Plan		
✔			**Noise and Vibration (14-526 (d) 7)** • Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements	33
Yes	NA	Plan		
		✔	**Signage and Wayfinding (14-526 (d) 8), if applicable** • Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff • Proposed commercial and directional signage on site	34
Yes	NA	Plan		
	✔		**Zone Related Design Standards (14-526 (d) 5)** • Address Historic Preservation Design Review, if applicable • Address any applicable design review standards by zone • Address submission requirements from Design Manual, page 1, addressing neighborhood context • Description of exterior materials, color, finish, and samples	35
Construction Management Plan				
Check list				
Yes	NA	Plan		
✔		✔	**Construction Management Plan** • Construction Management Document and Plan	36

Level II and Level III Site Plan Checklist

Please upload the following drawings with the listed details into e-Plan as separate pdfs.

☐ **RECENT BOUNDARY SURVEY** (stamped by Maine Licensed Surveyor)

Must be in compliance with Technical Manual, Section 13

SITE PLAN(s) (stamped by Maine Licensed Engineer) including:

☑ **Existing Conditions**

- Approximate location of structures on abutting property
- Topography
- Locate water courses
- Delineate wetlands
- Zone lines

☑ **Proposed Site Plan**

- Ground floor area, and grade elevations for all buildings

☑ **Access, Circulation, and Parking**

- Streets and intersections adjacent to site , any proposed geometric modifications
- Location, dimensions and materials of all existing and proposed driveways, vehicle, bicycle, & pedestrian access ways with corresponding curb lines
- Engineered specifications/ cross-sections for proposed driveways, sidewalks & paved areas
- Location and dimensions of proposed loading areas
- Existing and proposed transit infrastructure with dimensions/ engineering specifications
- Location of vehicle and bicycle parking with dimensions and engineering specifications

☑ **Site Considerations**

- Identify snow storage areas
- Location of fire hydrants
- Location of solid waste management facilities

☑ **UTILITY PLAN** including:

- Existing utilities on site and within public streets
- Location, sizing, and directional flows of all existing and proposed utilities
- Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- Electric utility infrastructure

☑ **GRADING and DRAINAGE PLAN** including:

- Existing grades and drainage
- Proposed grades
- Proposed stormwater management meeting Technical Manual (Section 5) standards
- Location and proposed alteration of a water course
- Preservation or alteration of wetlands

☑ **EROSION CONTROL**

- Must be in compliance with Technical Manual, Section 5

☑ **LANDSCAPE PLAN** including:

- Existing vegetation to be preserved and preservation measures
- Proposed landscaping and buffers
- Planting schedule

☐ **RECORDING PLAT**, if applicable

- IF SUBDIVISION: Must be in compliance with requirements of Section 14-496 (b)

☑ **ARCHITECTURAL PLANS & RENDERINGS** including:

- Exterior building elevations, color renderings, illustrations of all sides
- Location and dimensions of all existing & proposed HVAC & mechanical equipment, all proposed screening
- Provide context drawings, if applicable (Design Manual, page 1)
- Floor plans

02: Right, Title, Interest

The record owner of the parcel(s) is Two Eisenhower Drive, LLC by deed 32031/039 recorded at the Cumberland County Registry of Deeds (CCRD) on 01/15/2015. The parcels are identified by the City of Portland Assessor as follows: 330A-B-1, 330A-B-4 and 330A-B-11. A copy of the referenced deed is included in this section.

TRUSTEE'S DEED
(Maine Statutory Short Form)

KNOW ALL PERSONS BY THESE PRESENTS, that I, Cindy H. Andrews, as Trustee of Marital Trust B under the Carl D. Andrews Revocable Trust u/a dated April 1, 1986, as affected by an Order of the Cumberland County Probate Court, dated November 12, 2012, Docket # 2012-1403, by the power conferred by law, and every other power, for consideration paid, grant to Two Eisenhower Drive, LLC, a Maine limited liability company with an address of P.O. Box 1120, Portland, ME 04104, the real property described as follows:

Certain lots or parcels of land, with any buildings or improvements thereon, situated in the City of Portland, County of Cumberland and State of Maine, and being bounded and described as follows:

MAINE REAL ESTATE TAX PAID

PARCEL 1: A certain lot or parcel of land, with any buildings and improvements thereon, situated on the westerly side of Riverside Industrial Parkway in the City of Portland, County of Cumberland and State of Maine and further bounded and described as follows: BEGINNING at an iron set in the ground on the westerly side of said Riverside Industrial Parkway, which iron designates a point on the reverse curve of said Riverside Industrial Parkway at center line Station 39+81.64; from said point of beginning thence running by the westerly side of Riverside Industrial Parkway by a curve to the southwest having a radius of 1090.00 feet, a distance of 104.52 feet measured on the arc thereof to land now or formerly of the City of Portland; thence running North 54°58' West by said City of Portland land 84.22 feet to the northeasterly corner of land now or formerly of Rufus H. Jones; thence running North 45°38'30" West by said Jones land, 368.42 feet to an iron set in the ground at land of the Maine Turnpike Authority; thence running North 25°50' East by said Maine Turnpike Authority land 620.00 feet to an iron set in the ground at other land now or formerly of Area Development Council Project #1, Inc.; thence running South 46°54'30" East by said land now or formerly of said Area Development Council Project #1, Inc. herein, 507.64 feet to land conveyed by ADC Building Fund Incorporated to Davis-Greene Co. by deed dated December 18, 1962 and recorded in the Cumberland County Registry of Deeds in Book 2723, Page 182; thence running South 19°49' West by said Davis-Greene Co. land 161.78 feet to a corner in said Davis-Greene Co. land; thence running South 56°08'30" East by said Davis-Greene Co. land 106.38 feet to the westerly side of said Riverside Industrial Parkway; thence by said Riverside Industrial Parkway by a curve to the southwest having a radius of 1091.67 feet, a distance of 356.31 feet measured on the arc thereof to the point of beginning.

The above-described premises are subject to an easement given by ADC Building Fund Incorporated to the City of Portland for a sewer line as set forth in the deed from ADC Building Fund Incorporated, dated October 18, 1965 and recorded in the Cumberland County Registry of Deeds in Book 2931, Page 430.

EXCEPT, so much of the above which was conveyed to John E. Burrell by Area Development Council Project #1, Inc. by deed dated December 16, 1977 and recorded in said Registry of Deeds in Book 4149, Page 262.

Also excepting that parcel of land conveyed by John E. Coney, Jr. to John E. Burrell by deed dated February 18, 1981 and recorded in said Registry of Deeds in Book 4743, Page 110.

PARCEL 2: Also, another certain lot or parcel of land, with any buildings or improvements thereon, situated on the westerly side of Riverside Industrial Parkway in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows: BEGINNING at an iron pipe on the westerly side of Riverside Industrial Parkway at the southeast corner of the lot of land conveyed by Greater Portland Building Fund, Inc. to Aetna Cartage Company by deed dated April 18, 1972 and recorded in the Cumberland County Registry of Deeds in Book 3226, Page 290. Said corner also marks the line of a City of Portland sewer right of way, known as the Dole Branch, which is located on the lot herein conveyed; thence from said point of beginning and by said Aetna Cartage Company land running South 65°57' West 328.93 feet to an iron; thence continuing by said Aetna Cartage Company land and by a sewer right of way known as the Presumpscot North Maine Interceptor, North 24°03' West 303.34 feet to an iron pipe; thence through said sewer right of way North 71°22' West 106.03 feet to land of the Maine Turnpike Authority; thence by said Maine Turnpike Authority land South 25°50' West 527.41 feet to an iron at the northwest corner of land conveyed by Greater Portland Building Fund to John E. Coney, Jr. by deed dated March 29, 1973 and recorded in said Registry of Deeds in Book 3376, Page 51; thence by said Coney land South 46°54'30" East 507.64 feet to an iron pipe at land conveyed by ADC Building Fund Incorporated to Davis-Greene Co. by deed dated December 18, 1962, and recorded in said Registry of Deeds in Book 2723, Page 182; thence by said Davis-Greene Co. land North 19°49' East 320.12 feet to an iron pipe; thence continuing by said Davis-Greene Co. land North 68°40'30" East 196.31 feet to an iron pipe on the westerly side of Riverside Industrial Parkway; thence by said Riverside Industrial Parkway North 18°38' Fast 287.36 feet to the point of beginning.

Said above lot contains 279,815 square feet or 6.42 acres in accordance with a survey made by H.I. & E.C. Jordan, Surveyors.

Said above-described courses are based on true meridian.

PARCEL 3: A certain lot or parcel of land situated westerly of Riverside Industrial Parkway and Northerly of Milliken Street in the City of Portland, County of Cumberland, State of Maine, to wit:

COMMENCING at a point on the westerly side of land now or formerly of the Portland Terminal Company at the northerly corner of the land now or formerly owned by the Portland Water District;

Thence South 55°14'20" West, 71.28 feet along said Water District Land to a point;

Thence North 21°15'40" West, 17.82 feet along said Water District Land to a point;

Trustees of even date herewith executed by Richard A. Carriuolo and Cindy H. Andrews, as Trustees of Marital Trust B under the Carl D. Andrews Revocable Trust u/a dated April 1, 1986, as affected by Order of the Cumberland County Probate Court, dated November 12, 2012, Docket #2012-1403 and pursuant to Article VIII of the Agreement and Indenture of Trust establishing the Carl D. Andrews Revocable Trust u/a dated April 1, 1986, Cindy H. Andrews, acting singly, is duly authorized to execute and deliver this deed.

WITNESS our hands and seals, this 10th day of January, 2015.

WITNESS:

Cindy H. Andrews, as Trustee of Marital Trust B under the Carl D. Andrews Revocable Trust u/a dated April 1, 1986, as affected by Order of the Cumberland County Probate Court, dated November 12, 2012, Docket #2012-1403

~~STATE OF MAINE~~ Colorado
~~CUMBERLAND,~~ ss. Denver County

January 10, 2015

Then personally appeared the above-named Cindy H. Andrews, in her said capacity as Trustee and acknowledged the foregoing instrument to be her free act and deed as Trustee and the free act and deed of said Trust, before me,

Notary Public
Printed Name:

ZACHARY W. JOHNSON
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20144024056
MY COMMISSION EXPIRES JUNE 16, 2018

Thence South 74° 52' 45" West, 31.62 feet along said Water District Land to a point near an iron pipe;

Thence South 55°51'08" West, 75.26 feet along land now or formerly owned by Milliken Street LLC to a point near a 5/8" rebar;

Thence North 21°16'37" West, 555.77' feet along land said Milliken Street LLC land to a 5/8" rebar;

Thence South 68°44'47" West, 114.56 feet along said Milliken Street LLC land to a point near a 5/8" rebar;

Thence North 14°55' 55" West, 14.08 feet along said Milliken Street LLC land, passing over an iron pipe, said pipe distant 1.2 feet from the terminus of said course, to a point;

Thence South 75°08'46" West, 328.45 feet along said Milliken Street LLC land to a point;

Thence South 13°13'08" West, 61.39 feet along said Milliken Street LLC land to a point;

Thence South 68°44'47" West, 143.78 feet to a point in the easterly line of Milliken Street;

Thence along said easterly line North 56°10'30" West, 92.98 feet to a point;

Thence North 56°04'53" West, 117.32 feet to a point;

Thence continuing along the easterly line of Milliken Street North 56□04'53" West, 280.50 feet to a point;

Thence North 63°50'00" West, 258.77 feet to a point at the intersection of said easterly line and the southern line of land conveyed to ADC Building Fund, Inc. by Davis-Greene Co. dated December 18, 1962, recorded in Book 2723, Page 182;

Thence leaving said easterly line along said southern line North 55°47'03" West, 91.92 feet to a point at the intersection of said easterly line and said southern line;

Thence leaving said southern line along said easterly line of Milliken Street;

Thence leaving said easterly line North 55°47'03" West, 103.56 feet to a found iron pipe in the westerly right-of-way line of said Riverside Industrial Parkway at the true point of beginning;

Thence North 55°47'03" West, 106.38 feet to a point;

Thence North 19°50'40" East, 481.46 feet to a point;

Thence North 68°40'30" East, 196.31 feet to a found pipe in the said westerly right-of-way line;

Thence along said westerly right-of-way line South 18°39'48" West, 285.34 feet to a point;

Thence along a curve deflecting to the right having a radius of 1091.67', on arc of 357.01', a chord bearing of South 28°01'49" West, a chord of 355.43', to the TRUE POINT OF BEGINNING, containing 1.85 acres.

SUBJECT TO:

a. Easement to Central Maine Power Company and New England Telephone and Telegraph Company as set forth in an instrument dated June 8, 1965 and recorded in said Registry of Deeds in Book 2937, Page 381.

b. Certificate of Taking of Property by City of Portland by instrument dated July 20, 1964 and recorded in the Cumberland County Registry of Deeds in Book 2881, Page 318.

To the extent not otherwise conveyed above, also hereby releasing all right title and interest in and to the following described property:

BEGINNING at a 1-1/2" iron pipe on the westerly right-of-way line of Riverside Industrial Parkway at a northeasterly corner of land N/F of Carl D. Andrews Marital Deduction Trust as recorded in Deed Book 19863, Page 40, Cumberland County Registry of Deeds (CCRD);

THENCE N 55°52'49" W along the northerly line of said Trust 105.92' to a 1" iron pipe;

THENCE N 19°52'56" E along an easterly line of said Trust 481.06' to a 1" iron pipe;

THENCE N 68°26'23" E along a southeasterly line of said Trust 196.43 ' to a #5 rebar. Said rebar being on the westerly right-of-way line of Riverside Industrial Parkway;

THENCE S 18°41'06" W along the westerly right-of-way line of Riverside Industrial Parkway 285.32' to a point of curvature in said right-of-way;

THENCE on a curve to the right along the westerly right-of-way line of Riverside Industrial Parkway 357.07' to the POINT OF BEGINNING. Said curve has a radius of 1091.67' and a chord of S 28° 03'19" W 355.48'.

The above described parcel contains 80,418 s.f. or 1.85 acres more or less.

The basis of bearing for the above described parcel is Grid North. The above described parcel is partially shown as an abutting on a boundary survey prepared for R.M. Davis, Inc. c/o Arthur Borduas by Northeast Civil Solutions, Inc., dated August 26, 2009.

Being the same premises described in the deed to Grantor, dated December 28, 2012 and recorded in the Cumberland County Registry of Deeds, Book 30295, Page 118. Pursuant to a Certificate of

Received
Recorded Register of Deeds
Jan 15,2015 02:29:24P
Cumberland County
Nancy A. Lane

TRUSTEE'S DEED
(Maine Statutory Short Form)

KNOW ALL PERSONS BY THESE PRESENTS, that I, Cindy H. Andrews, as Trustee of Marital Trust B under the Carl D. Andrews Revocable Trust u/a dated April 1, 1986, as affected by an Order of the Cumberland County Probate Court, dated November 12, 2012, Docket # 2012-1403, by the power conferred by law, and every other power, for consideration paid, grant to Two Eisenhower Drive, LLC, a Maine limited liability company with an address of P.O. Box 1120, Portland, ME 04104, the real property described as follows:

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WITNESS our hands and seals, this 10th day of January, 2015.

WITNESS:

Cindy H. Andrews, as Trustee of Marital Trust B under the Carl D. Andrews Revocable Trust u/a dated April 1, 1986, as affected by Order of the Cumberland County Probate Court, dated November 12, 2012, Docket #2012-1403

~~STATE OF MAINE~~ Colorado
~~CUMBERLAND,~~ ss. Denver County

January 10, 2015

Then personally appeared the above-named Cindy H. Andrews, in her said capacity as Trustee and acknowledged the foregoing instrument to be her free act and deed as Trustee and the free act and deed of said Trust, before me,

Notary Public
Printed Name:

ZACHARY W. JOHNSON
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20144024056
MY COMMISSION EXPIRES JUNE 16, 2018

Thence South 74° 52' 45" West, 31.62 feet along said Water District Land to a point near an iron pipe;

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Thence North 21°16'37" West, 555.77' feet along land said Milliken Street LLC land to a 5/8" rebar;

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Thence along said westerly right-of-way line South 18°39'48" West, 285.34 feet to a point;

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THENCE N 55°52'49" W along the northerly line of said Trust 105.92' to a 1" iron pipe;

THENCE N 19°52'56" E along an easterly line of said Trust 481.06' to a 1" iron pipe;

THENCE N 68°26'23" E along a southeasterly line of said Trust 196.43 ' to a #5 rebar. Said rebar being on the westerly right-of-way line of Riverside Industrial Parkway;

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Being the same premises described in the deed to Grantor, dated December 28, 2012 and recorded in the Cumberland County Registry of Deeds, Book 30295, Page 118. Pursuant to a Certificate of

Received
Recorded Register of Deeds
Jan 15,2015 02:29:24P
Cumberland County
Nancy A. Lane

Portland Maine Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

RE: FW: 250 Riverside Industrial Parkway
1 message

Shawn Frank <sfrank@sebagotechnics.com> Wed, Jan 2, 2019 at 8:31 AM
To: Jean Fraser <jf@portlandmaine.gov>

Good Morning Jean:
Thank you for the message. The applicant proposes a permanent easement on the subject lot to benefit the abutting property to maintain the existing parking area and has forwarded the information to his attorney. This will allow the existing parking to remain to assure that no impact occurs to the abutting lot in regards to conformity to the Ordinance. Please do call with any outstanding items and we can discuss conditions.

All the best, Shawn

From: Jean Fraser [mailto:jf@portlandmaine.gov]
Sent: Monday, December 31, 2018 12:05 PM
To: Shawn Frank <sfrank@sebagotechnics.com>
Cc: Rebecca Gabryszewski <rgabryszewski@sebagotechnics.com>; Stefanie Nichols <snichols@sebagotechnics.com>; Sarah Hanf <shanf@sebagotechnics.com>; Derek Caldwell <dcaldwell@sebagotechnics.com>
Subject: Re: FW: 250 Riverside Industrial Parkway

Shawn

We are moving forward with this project to be on the January 8th PB hearing- I attach the Legal Ad and you will see the estimated time for your item is anticipated to be 7:45pm. The meeting is in Room 24 which is technically "challenging" in that there is no microphone system and the computer set up is more clumsy. Please send your presentation to the Board ahead of time (pdf is best but can be a powerpoint) and we will have it loaded on the desktop of the computer in that room, but please bring a flash drive of the presentation as well in case there is a glitch.

I have not heard from any reviewers at this time (holidays and illness have delayed comments) so at this point if there are any concerns I will hear on Wednesday morning, will discuss with you by 'phone, and then craft conditions of approval to address any that can not be easily resolved.

There is one Zoning issue that I need you to address which I brought to your attention on 12.13.18 - here is the e-mail that I sent to you (in *italics and highlighted*):

Re: FW: 250 Riverside Industrial Parkway

Jean Fraser <jf@portlandmaine.gov> *Thu, Dec 13, 10:24 AM*

to Shawn, Rebecca, snichols, shanf, Derek

Shawn

03: State and Federal Permits

The proposed site development requires review a Maine Department of Environmental Protection (MDEP) and the US Army Corps of Engineers (ACOE) for a stream crossing to gain access to the interior portion of the lot. MDEP will review a Natural Resources Protection Act Application and Maine Construction General Permit Application. The state and federal permits will be reviewed concurrently with the City of Portland Planning Board Level III Site Plan Review Application. The approvals will be forwarded to the City upon receipt.

04: General Application Documents

Zoning Assessment

The subject parcel is located entirely within the moderate impact industrial zone (I-M); and does not abut any other City zoning districts. The site will be utilized as property services business, which is a permitted use per Ch. 14 Sec.247(c) *Building Contractors and Construction and Engineering Services* of the City of Portland Code of Ordinances.

In accordance with the dimensional requirements defined in Section 14-250 of the City of Portland Code of Ordinances, the proposed development meets or exceeds ordinance requirements. The required *Zoning Assessment Table* is included in this section and reference is made to the plan set for additional space and bulk information.

ZONING ANALYSIS Relevant Zone(s) IM

All Projects:

	Required	Proposed
Lot Size	none	12.4 Ac. +/-
Area Per Dwelling Unit	n/a	n/a
Minimum Street Frontage	60 feet	989 +/- feet
Front Yard Minimum	1 ft./1ft building height	325.9 feet
Front Yard Maximum	n/a	n/a
Rear Yard	24 feet	158.5 +/- feet
Yard Right	24 feet	453+/- feet
Yard Left	24 feet	207 +/- feet
Side Street Setback	n/a	n/a
Step Back	n/a	n/a
Maximum Lot Coverage	n/a	n/a
Minimum Lot Coverage	n/a	n/a
Maximum Height	75 feet	24 feet
Open Space	n/a	n/a
Maximum Impervious Area	75 %	27.1%
Pavement Setback	10	260 feet +/- Min
Floor Area Ratio		
Off Street Parking Spaces	1 sp./ 1,000 sf	50
Loading Bays	-	0
Other 1		
Other 2		
Other 3		

Planned Residential Unit Developments (PRUD) Requirements

	Required	Proposed
Minimum Lot Size	n/a	
Minimum Lot Area per Dwelling	n/a	
Maximum # Units per Building	n/a	
Maximum Building Length	n/a	
Maximum Accessory Building Length	n/a	
Minimum Setbacks	n/a	
Minimum Building Separation	n/a	
Minimum Open Space	n/a	

Affordable Housing Density Bonuses (if applicable)

	Bonus Increase or Decrease	Maximum Allowable With Bonus	Proposed
Density	n/a		
Height	n/a		
Setback Reduction	n/a		
Recreation Space	n/a		
Maximum Accessory Building Length	n/a		
Minimum Setbacks	n/a		
Minimum Building Separation	n/a		
Minimum Open Space	n/a		
Explanatory Text 1 (optional):			
Explanatory Text 2 (optional):			
Explanatory Text 3 (optional):			

05: General Application Documents

Existing and/or Proposed Easements or Covenants

The proposed development site includes three parcels and the record deed and available survey plan information indicate the following:

A. Existing Easements and other encumberances:

1. Bailey Avenue Branch Sewer Easement is partially located along the northerly end of the site over Lots 330A-B-4 and 330A-B-11 as shown on the Existing Conditions and Site Plans.

2. Presumpscot North Interceptor Sewer Easement as shown on the enclosed Existing Conditions and Site Plans.

3. Dole Branch Sewer Right of Way

4. Central Maine Power and New England Telephone & Telegraph Company easement, 06/8/1965, CCRD 2937/381

5. Taking of property by City of Portland, 7/20/1964, CCRD 2881/318

6. Sewer line easement to City of Portland, 10/18/1965, CCRD 2931/431

B. New Easements

No new easements are proposed as part of the site development.

Standards to be Waived: Cite Ordinance or Technical Manual Standard	**Cite Standard Language:** Cute specific language of applicable Ordinance or Technical Manual Standard	**Waiver Being Sought:** Describe waiver being sought. Ex-We are requesting a two-way parking lot drive aisle width to 20 feet.	**Justification for Waiver:** Address specific waiver criteria, if applicable, and document reasons for the waiver request.
HVAC Emissions Verification Submittal	Site Plan Application –Final Plan General Submission Checklist, Pg. 7	The applicant requests a temporary submittal waiver from providing manufacturer's verification that equipment meets federal and state emissions requirements.	The applicant requests that the information be submitted upon finalization of the building mechanical systems and be considered as a formal Condition of Approval.
Photometric Plan Submittal	Technical Manual Section 12.8 – Site Lighting, Submissions	The applicant requests a temporary submittal waiver from providing a photometric plan	The applicant requests that the Plan be submitted upon finalization of the proposed lighting design and be considered as a Condition of Approval.
Ch. 25, Art. VI, Sec. 25-96, Sidewalk and Curbing Construction and Maintenance Ch. 14, Sec. 14-506(b) Sidewalks 1, 2, 6 Curbing 4	Where a nonresidential,…development requiring site plan approval abuts any accepted public street and a sidewalk with granite curbing…has not already been provided along the entire street frontage if this lot…In conjunction with major site plan review, the Planning Board,…may waive or modify the requirements contained herein upon a like finding and on the same terms and conditions as set forth in section 14-506(b) of this code. Sidewalks 1 - There is no reasonable expectation for pedestrian usage coming from, going to and traversing the site. 2 - There is no sidewalk in existence or expected within 1000 feet and the construction of sidewalk does not contribute to the development of a pedestrian oriented infrastructure. 6 - Strict adherence to the sidewalk requirement would result in a loss of significant site features related to landscaping or topography that are deemed of a greater public value. Curbing 4 - Strict adherence to the curb requirement would result in a loss of significant site features related to landscaping or topography that are deemed of a greater public value. City of Portland Land Use Standards Code of Ordinances…Runoff from the development site does not require curbing for stormwater management. In no events shall the waiver have the effect of creating potentially hazardous vehicle or pedestrian conflict or nullifying the intent and purpose and policies of the land development plan relating to transportation and pedestrian infrastructure and the regulations of this article. At its discretion, the planning authority may refer any petition for a waiver from the curb and sidewalk requirement to the Planning Board for decision.	The applicant requests a waiver from providing sidewalk/curbing along the street frontage.	The uses in this area are not typically pedestrian destinations nor do they have services/businesses that historically move pedestrians from one business to another. There is no sidewalk/curbing within 1,000 feet of the proposed development site and the construction of a single section of sidewalk does not contribute significantly to pedestrian oriented infrastructure. Adjacent and nearby development along the Parkway does not include sidewalks and curbing is limited to the driveway radii. The entry drive will be curbed.
Ch. 14, Sec. 14-526 (a) 2 c iii)	Continuous internal walkways shall be provided between existing or planned public sidewalks adjacent to the site, transit stops and street crossings and primary building entrances on the site.	The applicant requests a waiver from providing an internal walk to a planned or public sidewalk.	A waiver from the street frontage sidewalk has been requested, therefore we are requesting a waiver from providing an internal walk connection to the street. A walk is provided between the building and adjacent paved parking area.
Ch. 14, Sec. 14-526 2 (b) ii) and Technical Manual, Section 4	Developments with five or more parking spaces shall include at least two trees or 1 tree and 3 shrubs per five parking spaces planted in a landscaped islands to screen, shade and break up parking. Note: Based upon the proposed 50 parking stalls, 20 trees are required.	The applicant requests a waiver from providing curbed, landscaped islands within the parking area.	A waiver is sought based on the use of the site. Elimination of the islands allows fleet vehicles with trailers ease of access and circulation. The portion of the site to be developed is setback from the street by 340'± providing ample screening from the public street. Shading will be provided at the out limits of the parking area where the existing vegetation will remain.
Ch. 14, Sec. 14-526 2 (b) iii) and Technical Manual, Section 4	All development shall include street trees in numbers and locations as specified in Sec. 4 of the Technical Manual. Street trees are intended to benefit public spaces by providing green and natural elements that contribute to the streetscape and the urban forest ecosystem, provide health benefits, and increase the tree canopy to maximize shade and reduce energy use. (b) where the applicant can demonstrate that planting of required street trees in the City right-of-way, the Reviewing Authority may permit the following to be counted towards the street tree requirements, subject to the detailed standards set out in the Technical Manual: iii. The preservation of existing healthy trees that area six (6) inches or more in caliper, visible from the right-of-way and on the site within twenty feet of the property line;	The applicant requests a waiver from providing street trees in favor of a permitted alternative allowing preservation of trees adjacent to the right-of-way.	The existing site is wooded and providing natural elements that contribute to the streetscape and urban ecosystem. The tree canopy provides shading and provides no relief from energy use as it is not in close proximity to existing or proposed buildings. More specifically, the applicant proposes the preservation of healthy trees that are 6 inches or more in caliper, visible from Riverside Industrial Parkway right-of-way and on the site within twenty feet of the property line in the area immediately adjacent to the entry drive location. The proposed tree preservation area will extend a distance of one hundred linear feet on either side of the project entry drive.

07: General Application Documents

Financial Capability

The applicant for the development of this project is the record owner, Two Eisenhower Drive, LLC c/o Mr. David Machesney. A letter from Biddeford Savings written on behalf of the applicant is enclosed as demonstration of financial capability.

Biddeford Savings

June 21, 2018

City of Portland, Planning Division
389 Congress Street, 4th Floor
Portland, ME 04101

RE: Mr. David Machesney and 2 Eisenhower Drive, LLC, 250 Industrial Parkway.

To whom it may concern:

Biddeford Savings is pleased to entertain a request for financing by **2 Eisenhower Drive, LLC and David Machesney** on the development of a commercial building at 250 Industrial Parkway, Portland Maine. David Machesney and 2 Eisenhower Drive, LLC are customers in good standing and have the track record to engage in a project of this size.

The Bank is currently entertaining financing of the above referenced project and based on the current information on the project and subject to completion of underwriting and approval I am supportive of the request and it is my view that they have the financial capacity and wherewithal to complete the proposed project.

If you have any questions or comments regarding this letter, please call me at 571-5673, or send an e-mail to djones@biddefordsavings.com.

Sincerely,

Doug Jones
Senior Vice President
Business Banking Officer

08: General Application Documents

Technical Capability

The applicant has retained Sebago Technics, Inc., a consulting engineering firm, to assist in all aspects of the proposed site development. A firm introduction and key personnel resumes are included in this section.

Introduction to Sebago Technics, Inc.



Year Established: 1981 (36 years in business)

About Us: Sebago Technics, Inc. (STI) is a consulting firm of more than 65 design professionals and technical staff providing services throughout New England. From the start, our business plan was simple: "to provide quality, cost-effective civil engineering services that are responsive to a customer's goals, schedule and budget." Our One Company capabilities and resources provide clients with experience and solutions to respond to their planning, permitting and design needs.



Structure: Employee-owned since 1998

Services: Civil, environmental, transportation & traffic engineering; municipal engineering; local/state/federal permitting and planning; land surveying & laser scanning; GIS; landscape architecture; environmental services; and natural resources.

Employee Disciplines:
Professional Engineers, Civil Engineers, Transportation Engineers, Landscape Architects, Professional Land Surveyors, Survey Technicians, CADD Designers, Wetland Scientist, Soil Scientist, Construction Inspectors, Environmental Scientists, GIS Professionals, Marketing, Administrative & Financial



Professional Focus: Sebago Technics provides engineering and planning services to both public and private sector clients. In the municipal and government sectors we have provided multiple discipline services through General Services Contracts (GSC) and project specific contracts. A few examples include the Portland Jetport, City of Portland Public Services, City of South Portland, City of Lewiston, City of Westbrook and several smaller communities. Our municipal sector work includes street and utility infrastructure design, municipal facility planning and specialty work such as Island marine and solid waste planning & engineering.

Location: South Portland, ME



Geographic Service Area: Maine, New Hampshire, Vermont, Massachusetts

Web Site: www.sebagotechnics.com

WILLIAM T. CONWAY, RLA, LEED-AP

Senior Vice President, Landscape Architecture



When Mr. Conway joined Sebago Technics, Inc. in 1988, he established new disciplines of master planning, land planning, and landscape architecture. His extensive experience with multi-disciplinary professional teams and sound project management for government agencies, corporate clients, and private developers resulted in substantial growth in this field. The company is now recognized as one of the leading firms in the State of Maine for Landscape Architectural services.

Mr. Conway has had significant exposure and experience in professional practice resulting from his work throughout several regions of the United States, as well as Europe and the Middle East. He has also held key positions with design firms in Atlanta, Georgia and Tucson, Arizona prior to moving to Maine. He has held professional registrations in the states of Arizona, Georgia, Connecticut, Maine, and Hew Hampshire.

Much of his work involves large-scale projects, including the L.L. Bean Freeport Retail Store and Desert Road Campus, several projects for the American Skiing Company, the UNUM Provident Headquarters in Portland (HO-III), master planning and site design for Maine Medical Center in Portland and Scarborough, Maine, and a site selection study for IDEXX Laboratories in the Greater Portland area.

EXPERIENCE

Portsmouth Public Library, Portsmouth, New Hampshire - Will worked closely with City officials in the planning and design of this building, a recipient of LEED Silver Certification. Located in the vicinity of Strawberry Banke, the site design features an outdoor reading courtyard, in part enclosed by the remains of an historic armory which once stood on the library site.

Stroudwater Landing, Westbrook, Maine - Master planning services for a 65 acre elderly housing campus planned for comprehensive housing alternatives including independent and assisted living opportunities. Avita of Westbrook, a 70 bed assisted living facility specializing in memory care services, features extensively landscaped, secure exterior courtyards. Stroudwater Landing Lodge is a 95 unit independent and assisted living community, offering residents a variety of outdoor recreational amenities. The future build out of the campus is planned to accommodate 44 independent living cottage units and medical offices.

Avita of Brunswick, Brunswick, Maine – Site planning and landscape architectural services for a 70 bed assisted living facility, located within Brunswick Landing, a former naval air station. This project includes a graceful arrival to this one story building, comprised of three resident "neighborhoods" which share common core services and administrative offices. Each neighborhood has easy access to a secure exterior courtyard. The courtyards are lush garden areas with ample seating and activities including gardening and group activities.

Southern Maine Area on Aging Day Services, Biddeford, Maine – Site planning and landscape architecture for a day services facility serving the elderly population in southern York County. Working closely with the Southern Maine Area on Aging staff, this site was designed to facilitate daily drop off and pick up activities inherent with the facility program. The 10,000 square foot, single story building is complimented with a secure exterior courtyard with extensive landscape plantings, raised benches for gardening activities, walking paths and seating facilities.

Maine Veteran's Cemetery, Augusta, Maine – Site planning and landscape architectural services for a major expansion to the cemetery located in Augusta, Maine. The project is located in the heart of the cemetery grounds, and was designed with geometry derived from Arlington National Cemetery in Washington, D.C. Design review was coordinated with and approved by the Maine Bureau of General Services, the Maine Veterans Cemetery System, and the U.S. Department of Veterans Affairs.

EDUCATION

University of Tucson, Tucson, AZ
Bachelor of Science
Landscape Architecture, 1979

REGISTRATIONS

Registered Landscape Architect:
Maine #20000108

LEED Accredited Professional
CLARB Certified

MEMBERSHIPS

American Society of Landscape Architects

Council of Landscape Architectural Registration Boards

PUBLICATIONS

Doris Allen Twitchell Village Student Housing/ University of Maine, Orono, Maine; article in Contemporary Trends in Landscape Architecture, Van Nostrand Reinhold, 1997

SEBAGO TECHNICS

207.200.2055 WCONWAY@SEBAGOTECHNICS.COM

SHAWN M. FRANK, PE

Vice President, Commercial Development



Mr. Frank has over 33 years of experience in the civil engineering field on a wide variety of private and public projects. These include utility systems for sanitary and water supply, stormwater control/treatment, roadway design, and construction inspection. His expertise includes difficult design situations involving pipe trench depths of 20' and minimum slope piping in marginal soils. He has designed pump stations ranging from single-family package units to wet well/dry well systems exceeding 200 gpm.

EXPERIENCE

Mr. Frank specializes in the design and permitting of residential subdivisions and commercial site plans throughout southern Maine. The number of lots within the subdivisions ranged from three to ninety. All of the projects required review and approval by the local municipal planning board. The larger projects required permitting through the Maine Department of Environmental Protection. Mr. Frank prepared the applications for submission, coordinated the review with staff and presented the projects to the planning boards.

Mr. Frank is particularly skilled in the coordination of the internal departments at Sebago Technics, as well as presentations to clients and local planning boards. His professionalism and attention to publicly sensitive issues, combined with his technical knowledge, has made him effective in dealing with local concerns about project impacts, both during and after construction.

Prior to joining Sebago Technics, Mr. Frank worked as a design engineer with an architectural/engineering firm in Bangor. In this role, he was exposed to many disciplines of civil engineering. His main emphasis and responsibilities consisted of site and utility design.

EDUCATION

Norwich University
Northfield, VT
Bachelor of Science, Civil Engineering
1984

MEMBERSHIPS

Chi Epsilon,
National Civil Engineering Honor Society

American Society of Civil Engineers

Director, Maine Aggregate Association

REGISTRATIONS

Professional Engineering:
Maine #6396

SEBAGO TECHNICS

207.200.2062 SFRANK@SEBAGOTECHNICS.COM

RICHARD L. MEEK, PE, LEED-AP

Senior Project Engineer



Mr. Meek joined the staff of Sebago Technics, Inc. in 2002 as a Design Engineer. Since then, he has performed project engineering for numerous municipal, commercial and residential design projects in Maine and New Hampshire. His specialties include hydrologic and hydraulic analyses for open and closed roadway drainage systems, roadway design and plan preparation, utility coordination, design of temporary traffic control schemes, and environmental permitting associated with state and municipal transportation related projects. Rick is LEED certified and as such he has a particular interest in providing our projects with innovative water quality treatment solutions to stormwater management. He is proficient in the use of the latest design software including AutoCAD and MicroStation, HydroCAD, Hydra-Flow, HY-8, and the full suite of Microsoft Office products.

EXPERIENCE

Currently, he is involved in the final design of a $1.5M road reconstruction project on Rochester Street in Berwick, ME for the MaineDOT. This is an MS4 community that requires proactive strategies for stormwater management. A number of treatments were evaluated for use on this project, but ROW constraints limited the options to the use of catch basin cartridge inserts that will filter runoff prior to its being discharged into the Salmon Falls River.

Rick is also working with the Town of Kittery on the development of a long-range corridor improvement Study for Upper Route 1 through the commercial retail outlet section. This design includes access management provisions, new signalization, a uniform 5-lane section, a new Shared Use Path, landscaped medians, and innovative Low Impact Development (LID) stormwater treatment strategies for the roadway and abutting developments in several locations due to the proximity of Spruce Creek, and impaired water body.

Mr. Meek is an active member of the firm's Design/Build Team providing civil engineering and permitting support for a $60M interstate bridge replacement on I-91 in Brattleboro, VT for VTrans. Here he is assisting in the production of the Maintenance of Traffic Plans, approach roadway and drainage design, and environmental permitting.

Most recently, Rick is also providing utility design services in support of the new Sarah Mildred Long Bridge between Portsmouth and Kittery.

EDUCATION

Auburn University, Auburn, AL
Bachelor of Science,
Civil Engineering, 1999

New Hampshire Technical College,
Stratham, NH
Associate in Applied Science,
Electro-Mechanical Drafting, 1990

REGISTRATIONS

Professional Engineer: Maine #10668

LEED Accredited Professional

MEMBERSHIPS

American Society of Civil Engineers

TRAINING

University of New Hampshire's
Stormwater Center, 2013

Certified Professional in Erosion and
Sediment Control, 2011

Phosphorus Management Design, 2008

Biofilter Media Design, 2008

Maintenance and Inspection of
Stormwater BMP's, 2009

Low Impact Development, 2005

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207.200.2075 RMEEK@SEBAGOTECHNICS.COM

SARAH A. HANF

Civil Engineer



Mrs. Hanf joined Sebago Technics, Inc. in 2017 as a Civil Engineer. With 7 years of experience in the civil engineering field Mrs. Hanf has been involved in a wide variety of projects in Maine and New Hampshire. Sarah has a vast experience within the education sector for primary and secondary schools. She has designed and permitted residential developments for private developers and college universities. Sarah has also been involved in private retail and commercial developments, municipal sewer separations and small roadway projects.

EXPERIENCE

Blueberry Lane Improvements – Falmouth, ME: Civil Engineer/Designer: Led the design team's efforts in coordinating with the Public Works Director and Town Engineer on a full-depth sidewalk reconstruction project with milling and overlay of 2800 LF of roadway in Blueberry Lane. Additional project work consisted of road-side parking spaces, lighting and utility upgrades. Sarah assisted the Town throughout the bidding process. The project is to be constructed this summer.

Bowdoin Park Row Residences – Brunswick, ME: Mrs. Hanf is currently working as a Civil Engineer/Designer for designing and permitting the addition of four three-story apartment buildings along Park Row on the Bowdoin Campus. Proposed site improvements supporting the housing consist of pedestrian walkways, patios, common areas, landscaping, and innovative stormwater treatment areas such as porous asphalt, permeable pavers and meadow basins.

The Residences at Clarks Pond – South Portland, ME: Mrs. Hanf was a lead engineer/assistant for designing and permitting a residential community consisting of four six-story residential buildings. Project work included site and parking layout, site circulation, and designated common areas. The proposed community had very particular requirements for utilities and it was determined that the use of subsurface soil filters would be needed for treatment due to site restrictions and portions of the property belonging to the Portland Water District.

Ottawa Road – Sewer Separation – South Portland, ME: Mrs. Hanf assisted in the phased sewer separation project in South Portland. Responsibilities included disconnecting foundation drains, trench drains to eliminate inflow, and repairing damages to reduce infiltration into the existing sanitary sewer system. Project work involved lining sewers mains, manholes, and repairing lateral connections, where damages were noted from video surveillance. Other project work involved drainage improvements, utility upgrades and resurfacing existing roadways.

Waterpark Expansion Phase II, Funtown/Splashtown USA - Saco, ME: Performed extensive site and stormwater drainage design and analysis for a water park expansion that included the addition of a restroom facility, restaurant, group event area, six new water slides, and a concrete deck for additional seating and lounging to obtain state environmental permitting. Project included careful selection and design of stormwater treatment in order to maximize usable space within the project boundary. Treatment included porous pavers, grassed underdrained soil filters and bioretention cells. Construction observation and construction administration tasks were also performed.

Falmouth Elementary School - Falmouth, ME: Civil engineer/design assistant for multi-year, multi-phase project including the complete redevelopment of an existing school campus and the construction of a 139,000 sf elementary school, including parking, circulation, community connectivity, and athletic fields. Site development constraints necessitated the use of innovative use of stormwater treatment methods to meet State requirements for stormwater runoff. Services included site selection and design, environmental permitting, creation of bidding documents, and construction administration.

EDUCATION

University of Maine, Orono, ME
Bachelor of Science,
Civil & Environmental Engineering
2007

CERTIFICATIONS

Maine DEP Certified BMP Inspector
(Pending)

MEMBERSHIPS

American Society of Civil Engineers
(ASCE)

SKILLS

AutoCAD – Civil 3D, HydroCAD,
SWMM Modeling, HEC-RAS

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207.200.2115 SHANF@SEBAGOTECHNICS.COM

09: Transportation

Transportation Analysis – Traffic Impact (14-526(a)1)

- Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts.

    1. In accordance with Transportation Standards – Impacts on Surrounding Street Systems, provision has been made for vehicle loading, unloading and parking and for vehicular and pedestrian circulation on the site and onto Riverside Industrial Parkway. Please see the attached site plan for additional information.

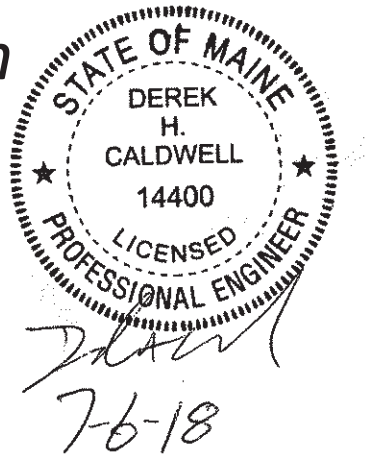
- Traffic Impact Study (Technical Manual, Section 1), if applicable.

    Not applicable. Reference is made to the enclosed Traffic Impact Statement addressing trip generation and sight distance analysis dated July 6, 2018 prepared by Mr. Derek Caldwell, PE, PTOE of Sebago Technics, Inc. Site Reconnaissance indicates that a Maine Department of Transportation (MDOT) Traffic Movement Permit is not necessary based on the projected Trip Ends and location of the entry drive. Per the Technical Manual, the proposed project also does not meet the criteria requiring a Traffic Impact Study.

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Memorandum



16360

To: **Shawn Frank, P.E.**

From: **Derek Caldwell, P.E., PTOE**

Date: **July 6th, 2018**

Subject: **Traffic Impact Statement**
Seabreeze Property Services Facility
Portland, Maine

We have completed a trip generation and sight distance analysis for the proposed Seabreeze Property Services facility on Riverside Industrial Parkway in Portland. It is our understanding the project is to consist of an approximately 11,200 square foot building accessed by a new driveway on the northern side of Riverside Industrial Parkway. The proposed driveway is to be located approximately 400 feet to the west of Milliken Street. The parcel of land is currently undeveloped.

Trip Generation

Turning movement counts were conducted at the existing Seabreeze facility located at 415 Presumpscot Street in Portland on Tuesday June 26, 2018 between the hours of 5-8 AM and 2-5 PM. These hours represent the expected peak hours of the facility. Based on the findings of the traffic counts, the peak hour of the development is between 6:30 AM and 7:30 AM. During this peak hour a total of 75 trips (39 entering and 36 exiting trips) were recorded. It is assumed that the new facility will generate a similar amount of traffic. Therefore this development does not require a MaineDOT Traffic Movement Permit (TMP).

In addition, we have evaluated the need for an additional traffic study based upon the Section 1.1 of the *City of Portland Technical Manual.* A traffic study is required 25 or more passenger car equivalent trips are generated and the following:

(1) on an arterial; and/or
(2) within ½ mile of a high crash location; and/or
(3) within ¼ mile of an intersection that has been identified in a previous traffic study as a failing intersection, with an overall level of service below level of service D,

Although the development is projected to generate more than 25 PCE, a traffic study is not required due to the following:

1.) Riverside Industrial Parkway is classified as a local roadway.
2.) The project site is not located within a ½ mile of a high crash location.

3.) The project site is not within ¼ mile of an intersection that has previously been identified as a failing intersection.

Sight Distance

Table 2 shows the minimum required sight distance as specified in the City of Portland Technical Manual.

Table 1
MaineDOT Required Sight Distance

Allowable Speed (MPH)	*Required Sight Distance (feet)*
25	200
30	250
35	305
40	360
45	425
50	495
55	570

At the driveway location the posted speed limit of Riverside Industrial Parkway is 25 miles per hour, and therefore requires an available sight distance of 200 feet.

Sight distance was measured at the location of the proposed driveway on June 27, 2018. Sight distance was determined to be in excess of 500 feet looking to the left and 425 feet looking to the right. Both of these measured distances are greater than the minimum required by the City of Portland.



Looking Right from the Site Driveway

75 John Roberts Road – Suite 4A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206



Looking Left from the Site Driveway

Attachment

- Turning Movement Counts

75 John Roberts Road – Suite 4A, South Portland, ME 04106-6963 • 207.200.2100 • Fax: 207.856.2206

Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Cars - Trucks

	Presumpscot St From North		Seabreeze Landscaping From East		Presumpscot St From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
05:00 AM	2	3	0	0	1	0	6
05:15 AM	0	7	0	0	5	0	12
05:30 AM	1	11	0	0	2	0	14
05:45 AM	1	15	1	0	2	2	21
Total	4	36	1	0	10	2	53
06:00 AM	5	19	0	0	6	2	32
06:15 AM	1	38	0	1	7	2	49
06:30 AM	12	49	1	2	11	8	83
06:45 AM	7	55	6	1	12	9	90
Total	25	161	7	4	36	21	254
07:00 AM	2	49	12	5	17	1	86
07:15 AM	0	82	6	3	13	0	104
07:30 AM	1	117	3	3	16	1	141
07:45 AM	4	132	0	2	24	1	163
Total	7	380	21	13	70	3	494
Grand Total	36	577	29	17	116	26	801
Apprch %	5.9	94.1	63	37	81.7	18.3	
Total %	4.5	72	3.6	2.1	14.5	3.2	
Cars	36	576	29	17	113	26	797
% Cars	100	99.8	100	100	97.4	100	99.5
Trucks	0	1	0	0	3	0	4
% Trucks	0	0.2	0	0	2.6	0	0.5

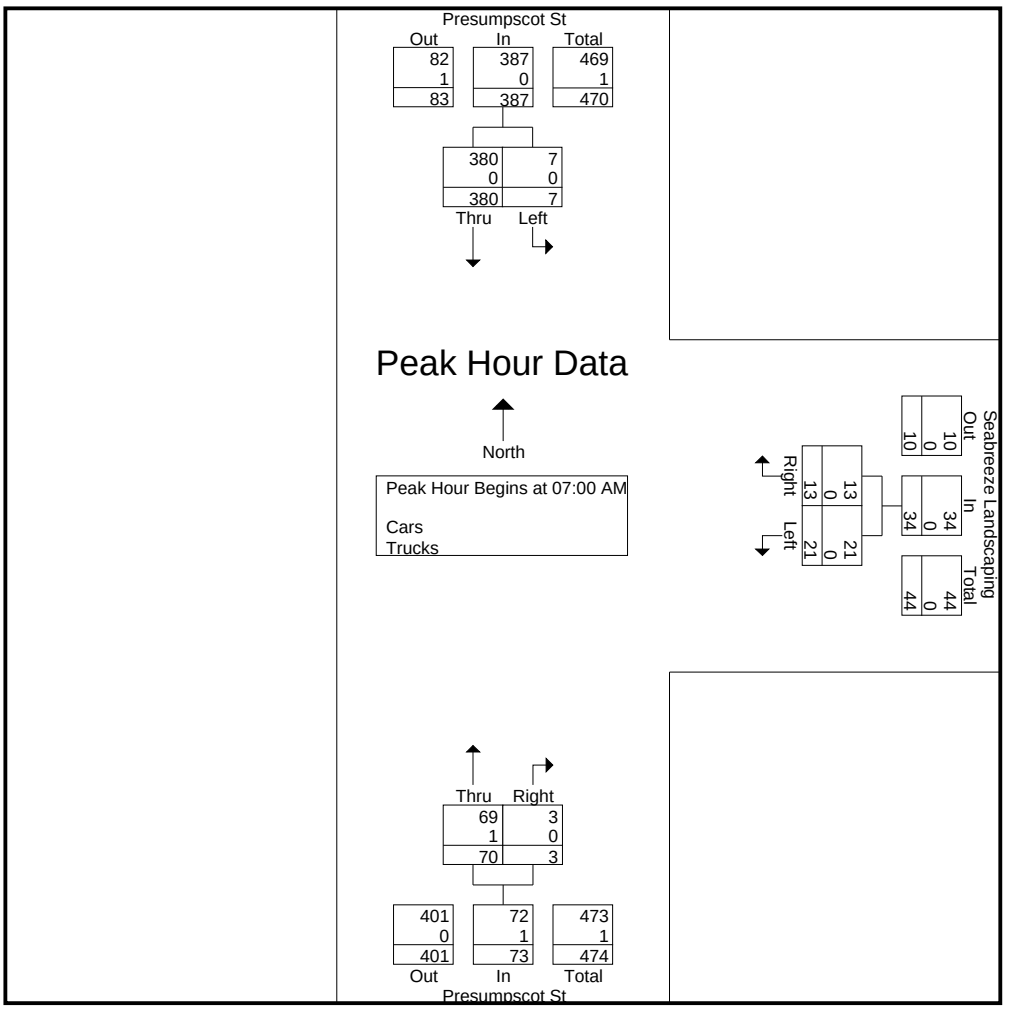
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 2

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	2	49	51	**12**	**5**	**17**	17	**1**	18	86
07:15 AM	0	82	82	6	3	9	13	0	13	104
07:30 AM	1	117	118	3	3	6	16	1	17	141
07:45 AM	**4**	**132**	**136**	0	2	2	**24**	1	**25**	**163**
Total Volume	7	380	387	21	13	34	70	3	73	494
% App. Total	1.8	98.2		61.8	38.2		95.9	4.1		
PHF	.438	.720	.711	.438	.650	.500	.729	.750	.730	.758
Cars	7	380	387	21	13	34	69	3	72	493
% Cars	100	100	100	100	100	100	98.6	100	98.6	99.8
Trucks	0	0	0	0	0	0	1	0	1	1
% Trucks	0	0	0	0	0	0	1.4	0	1.4	0.2



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

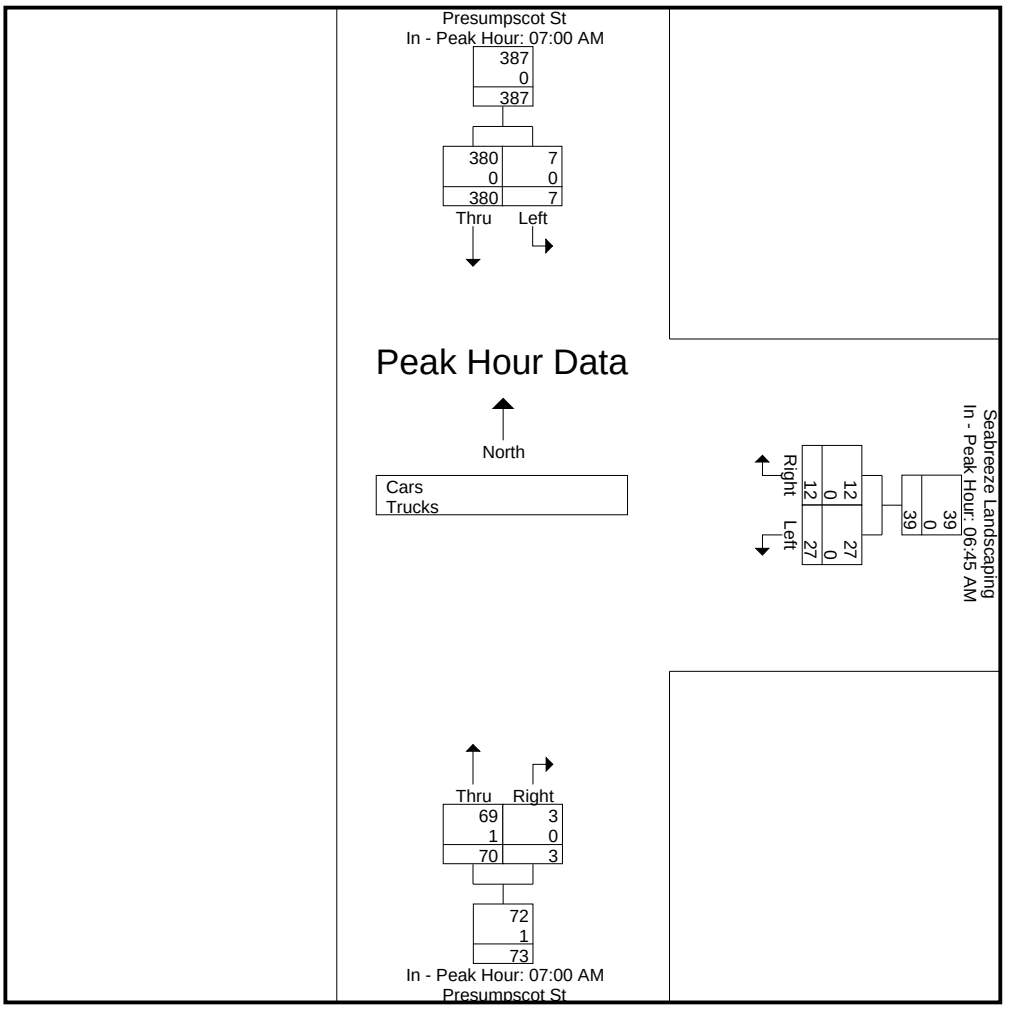
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 3

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			06:45 AM			07:00 AM		
+0 mins.	2	49	51	6	1	7	17	**1**	18
+15 mins.	0	82	82	**12**	**5**	**17**	13	0	13
+30 mins.	1	117	118	6	3	9	16	1	17
+45 mins.	**4**	**132**	**136**	3	3	6	**24**	1	**25**
Total Volume	7	380	387	27	12	39	70	3	73
% App. Total	1.8	98.2		69.2	30.8		95.9	4.1	
PHF	.438	.720	.711	.563	.600	.574	.729	.750	.730
Cars	7	380	387	27	12	39	69	3	72
% Cars	100	100	100	100	100	100	98.6	100	98.6
Trucks	0	0	0	0	0	0	1	0	1
% Trucks	0	0	0	0	0	0	1.4	0	1.4



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Cars

	Presumpscot St From North		Seabreeze Landscaping From East		Presumpscot St From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
05:00 AM	2	3	0	0	1	0	6
05:15 AM	0	7	0	0	4	0	11
05:30 AM	1	11	0	0	2	0	14
05:45 AM	1	15	1	0	2	2	21
Total	4	36	1	0	9	2	52
06:00 AM	5	19	0	0	6	2	32
06:15 AM	1	37	0	1	7	2	48
06:30 AM	12	49	1	2	10	8	82
06:45 AM	7	55	6	1	12	9	90
Total	25	160	7	4	35	21	252
07:00 AM	2	49	12	5	16	1	85
07:15 AM	0	82	6	3	13	0	104
07:30 AM	1	117	3	3	16	1	141
07:45 AM	4	132	0	2	24	1	163
Total	7	380	21	13	69	3	493
Grand Total	36	576	29	17	113	26	797
Apprch %	5.9	94.1	63	37	81.3	18.7	
Total %	4.5	72.3	3.6	2.1	14.2	3.3	

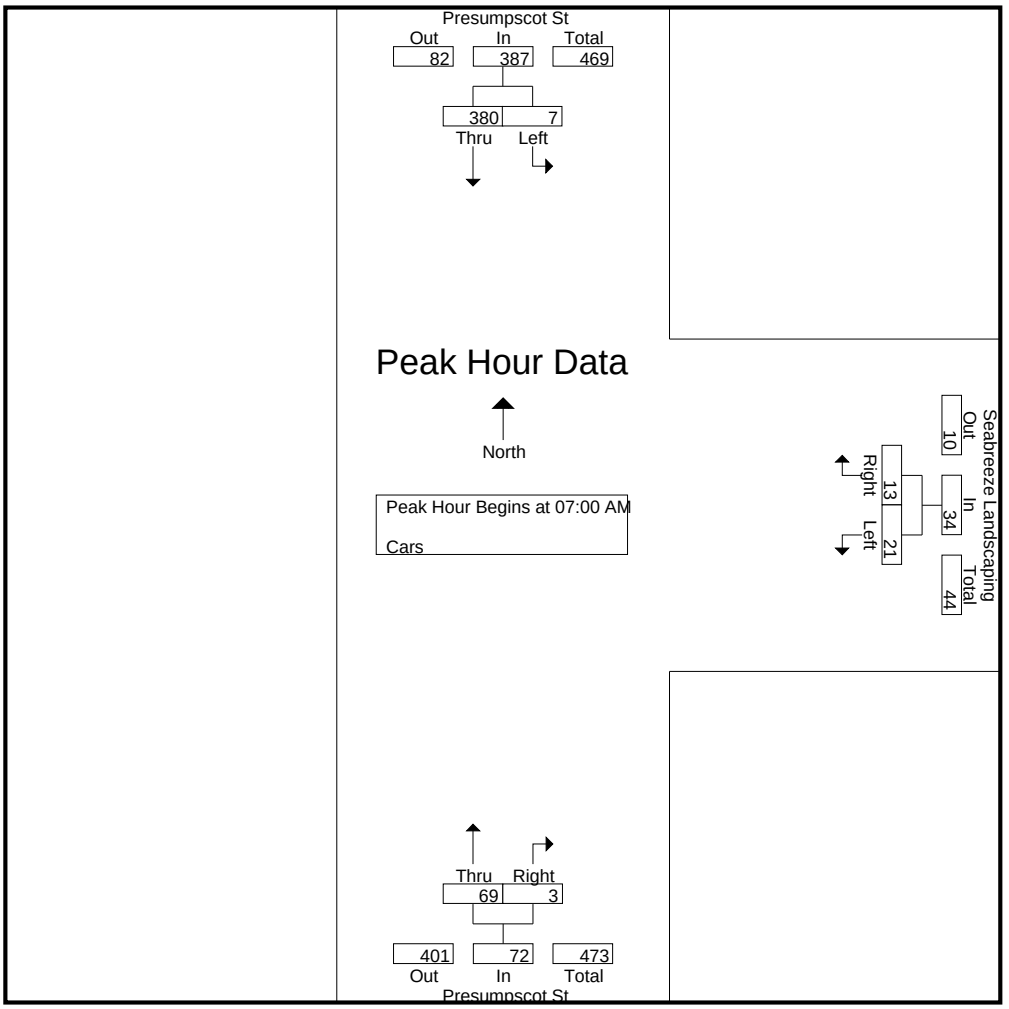
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 5

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	2	49	51	**12**	**5**	**17**	16	**1**	17	85
07:15 AM	0	82	82	6	3	9	13	0	13	104
07:30 AM	1	117	118	3	3	6	16	1	17	141
07:45 AM	**4**	**132**	**136**	0	2	2	**24**	1	**25**	**163**
Total Volume	7	380	387	21	13	34	69	3	72	493
% App. Total	1.8	98.2		61.8	38.2		95.8	4.2		
PHF	.438	.720	.711	.438	.650	.500	.719	.750	.720	.756



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

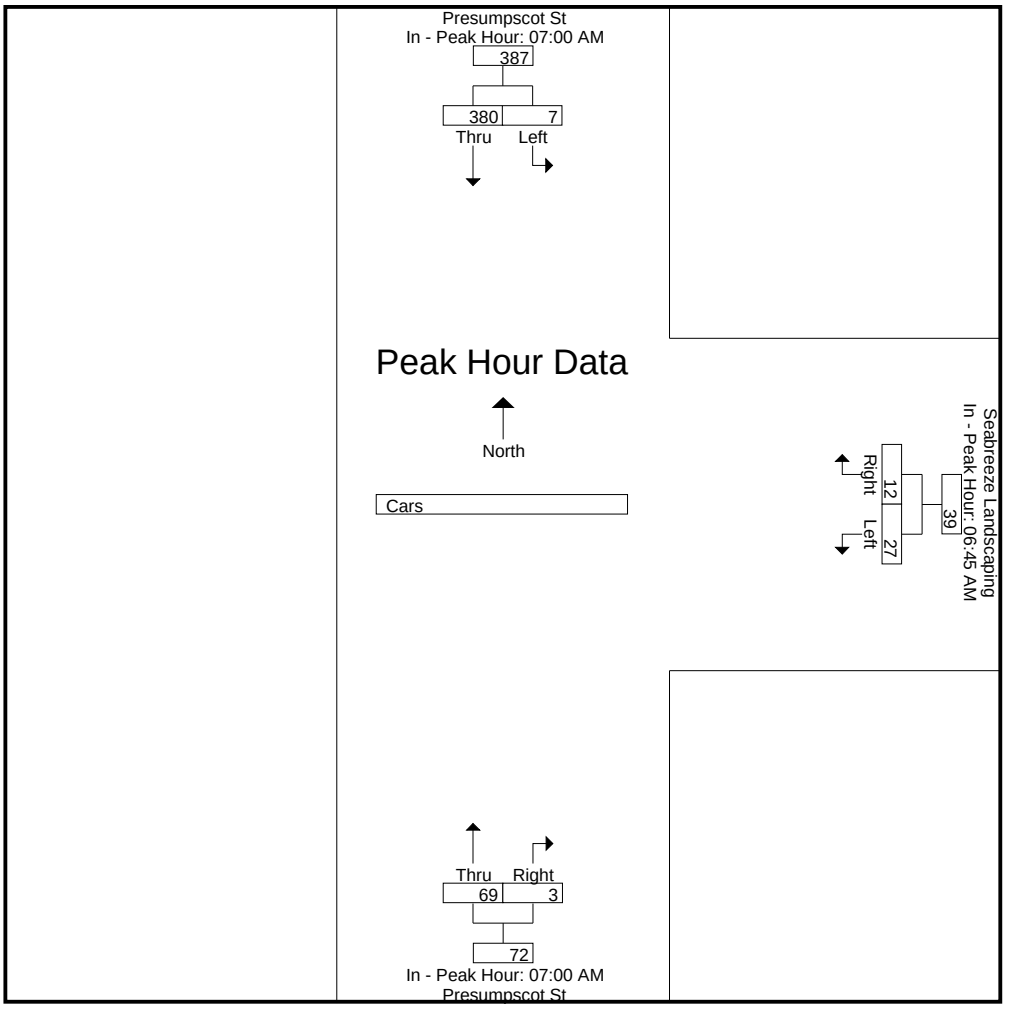
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 6

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			06:45 AM			07:00 AM		
+0 mins.	2	49	51	6	1	7	16	**1**	17
+15 mins.	0	82	82	**12**	**5**	**17**	13	0	13
+30 mins.	1	117	118	6	3	9	16	1	17
+45 mins.	**4**	**132**	**136**	3	3	6	**24**	1	**25**
Total Volume	7	380	387	27	12	39	69	3	72
% App. Total	1.8	98.2		69.2	30.8		95.8	4.2	
PHF	.438	.720	.711	.563	.600	.574	.719	.750	.720



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Trucks

	Presumpscot St From North		Seabreeze Landscaping From East		Presumpscot St From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
05:00 AM	0	0	0	0	0	0	0
05:15 AM	0	0	0	0	1	0	1
05:30 AM	0	0	0	0	0	0	0
05:45 AM	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	1
06:00 AM	0	0	0	0	0	0	0
06:15 AM	0	1	0	0	0	0	1
06:30 AM	0	0	0	0	1	0	1
06:45 AM	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	2
07:00 AM	0	0	0	0	1	0	1
07:15 AM	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	1
Grand Total	0	1	0	0	3	0	4
Apprch %	0	100	0	0	100	0	
Total %	0	25	0	0	75	0	

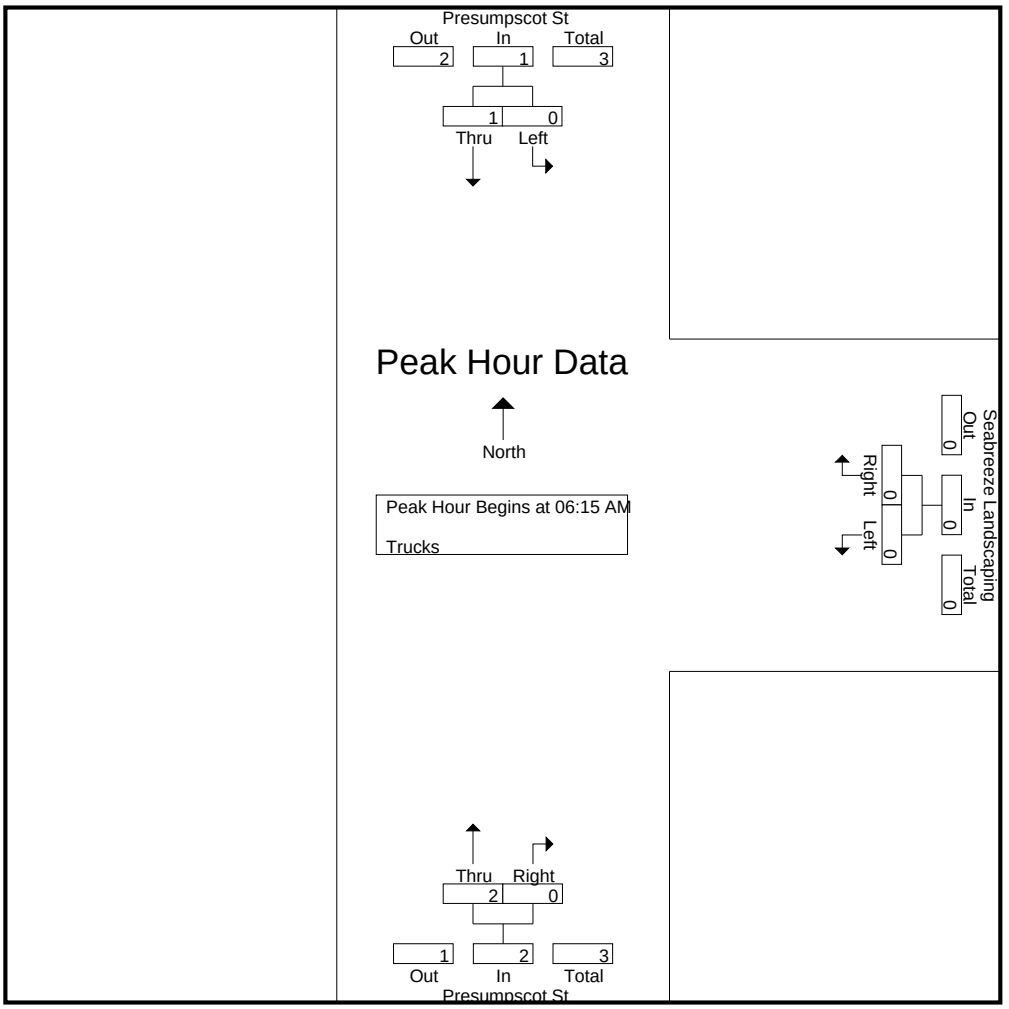
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 8

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 06:15 AM										
06:15 AM	0	**1**	**1**	0	0	0	0	0	0	**1**
06:30 AM	0	0	0	0	0	0	**1**	0	**1**	1
06:45 AM	0	0	0	0	0	0	0	0	0	0
07:00 AM	0	0	0	0	0	0	1	0	1	1
Total Volume	0	1	1	0	0	0	2	0	2	3
% App. Total	0	100		0	0		100	0		
PHF	.000	.250	.250	.000	.000	.000	.500	.000	.500	.750



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

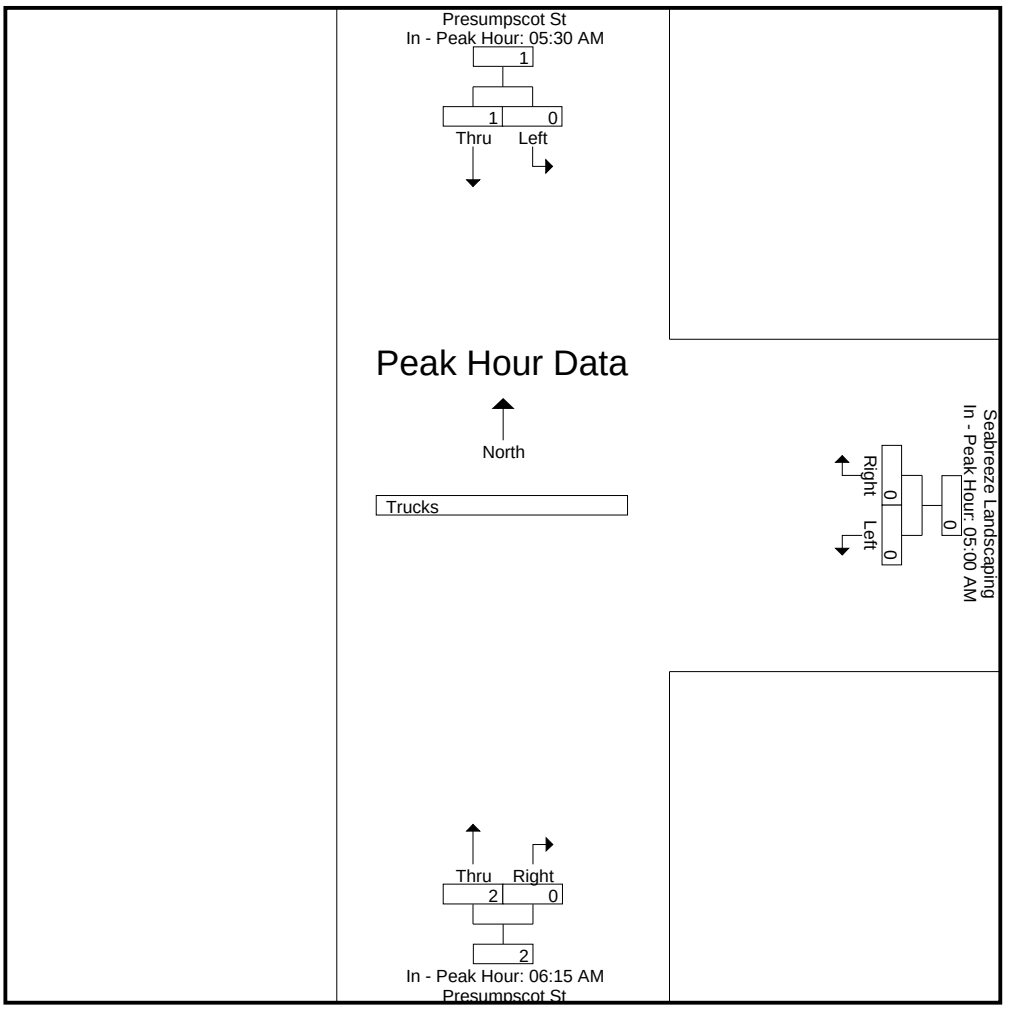
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 9

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:30 AM			05:00 AM			06:15 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	**1**	0	**1**
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	**1**	**1**	0	0	0	1	0	1
Total Volume	0	1	1	0	0	0	2	0	2
% App. Total	0	100		0	0		100	0	
PHF	.000	.250	.250	.000	.000	.000	.500	.000	.500



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Bikes Peds

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
05:45 AM	0	1	0	0	0	0	0	0	0	0	1	1
Total	0	1	0	0	0	0	0	0	0	0	1	1
06:00 AM	0	1	0	0	0	0	0	0	0	0	1	1
06:15 AM	0	0	0	0	0	0	0	1	0	0	1	1
06:30 AM	0	2	0	0	0	0	1	1	0	0	4	4
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	3	0	0	0	0	1	2	0	0	6	6
07:00 AM	0	2	0	0	0	0	0	0	0	0	2	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	2	0	0	0	2	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	0	0	2	0	0	0	4	4
Grand Total	0	6	0	0	0	0	3	2	0	0	11	11
Apprch %	0	100		0	0		60	40				
Total %	0	54.5		0	0		27.3	18.2		0	100	

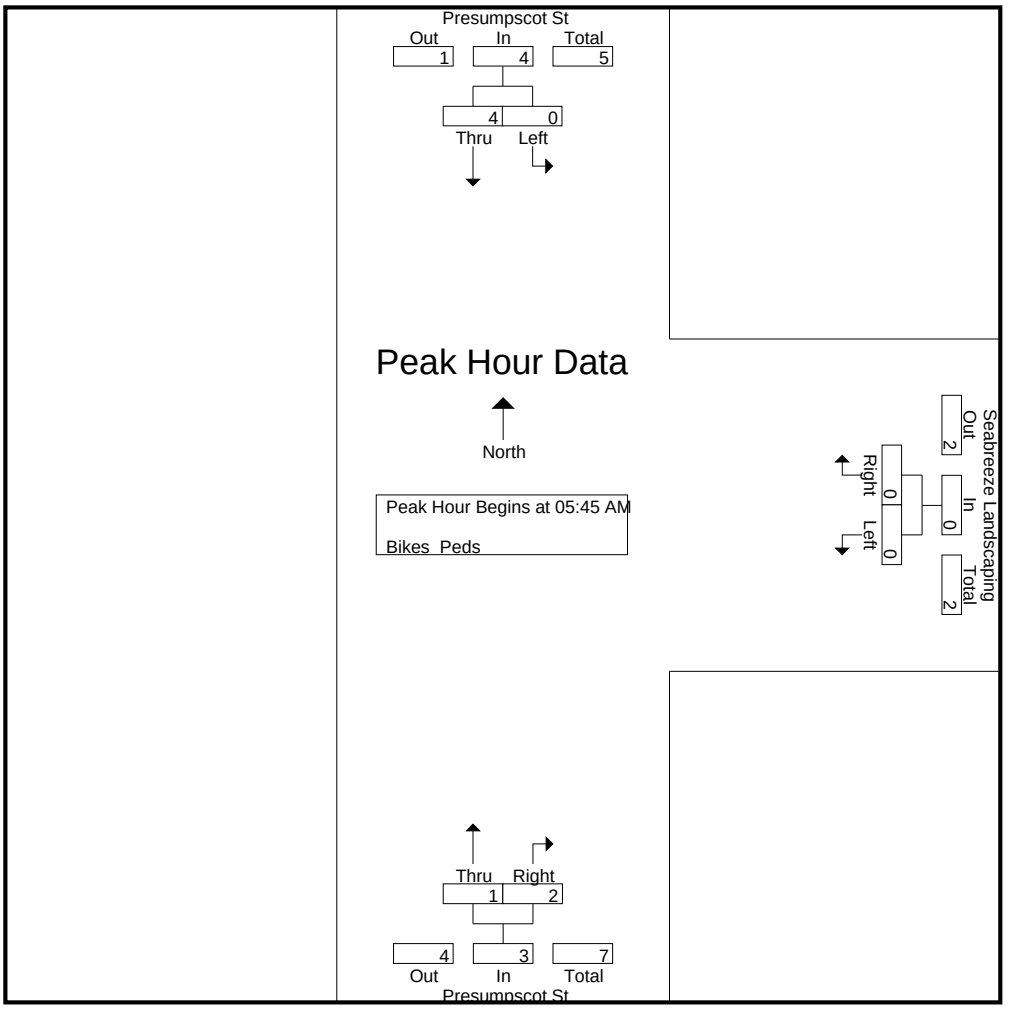
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 11

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:45 AM										
05:45 AM	0	1	1	0	0	0	0	0	0	1
06:00 AM	0	1	1	0	0	0	0	0	0	1
06:15 AM	0	0	0	0	0	0	0	**1**	1	1
06:30 AM	0	**2**	**2**	0	0	0	**1**	1	**2**	**4**
Total Volume	0	4	4	0	0	0	1	2	3	7
% App. Total	0	100		0	0		33.3	66.7		
PHF	.000	.500	.500	.000	.000	.000	.250	.500	.375	.438



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

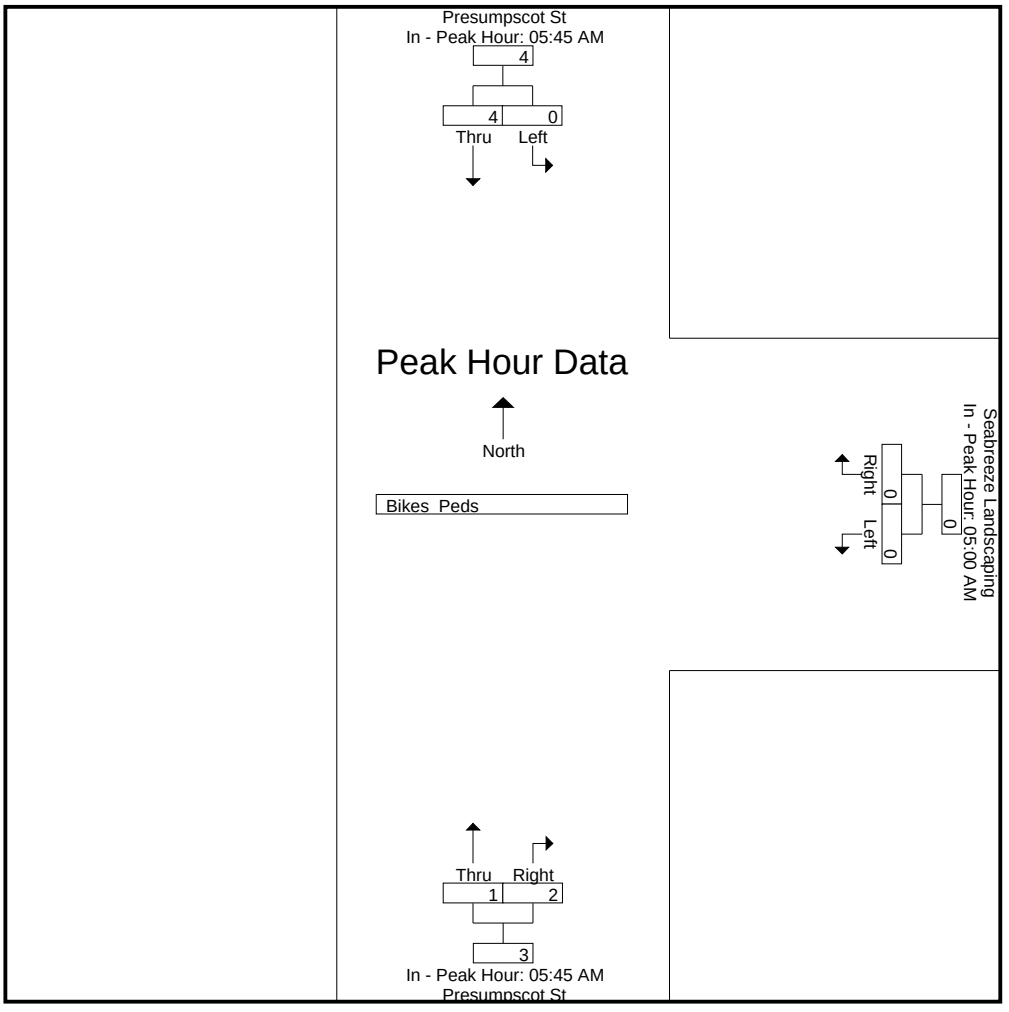
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 12

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:45 AM			05:00 AM			05:45 AM		
+0 mins.	0	1	1	0	0	0	0	0	0
+15 mins.	0	1	1	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	**1**	1
+45 mins.	0	**2**	**2**	0	0	0	**1**	1	**2**
Total Volume	0	4	4	0	0	0	1	2	3
% App. Total	0	100		0	0		33.3	66.7	
PHF	.000	.500	.500	.000	.000	.000	.250	.500	.375



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 1

Groups Printed- Cars - Trucks

	Presumpscot St From North		Seabreeze Landscaping From East		Presumpscot St From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
02:00 PM	0	26	0	0	38	1	65
02:15 PM	0	34	0	1	45	1	81
02:30 PM	0	26	1	0	41	2	70
02:45 PM	0	21	3	3	41	1	69
Total	0	107	4	4	165	5	285
03:00 PM	0	30	1	2	53	0	86
03:15 PM	0	32	0	0	61	3	96
03:30 PM	0	33	2	0	69	2	106
03:45 PM	0	30	3	2	81	1	117
Total	0	125	6	4	264	6	405
04:00 PM	1	32	0	1	101	1	136
04:15 PM	0	30	2	0	98	1	131
04:30 PM	1	23	0	0	78	0	102
04:45 PM	0	40	0	0	113	1	154
Total	2	125	2	1	390	3	523
Grand Total	2	357	12	9	819	14	1213
Apprch %	0.6	99.4	57.1	42.9	98.3	1.7	
Total %	0.2	29.4	1	0.7	67.5	1.2	
Cars	2	354	12	9	818	14	1209
% Cars	100	99.2	100	100	99.9	100	99.7
Trucks	0	3	0	0	1	0	4
% Trucks	0	0.8	0	0	0.1	0	0.3

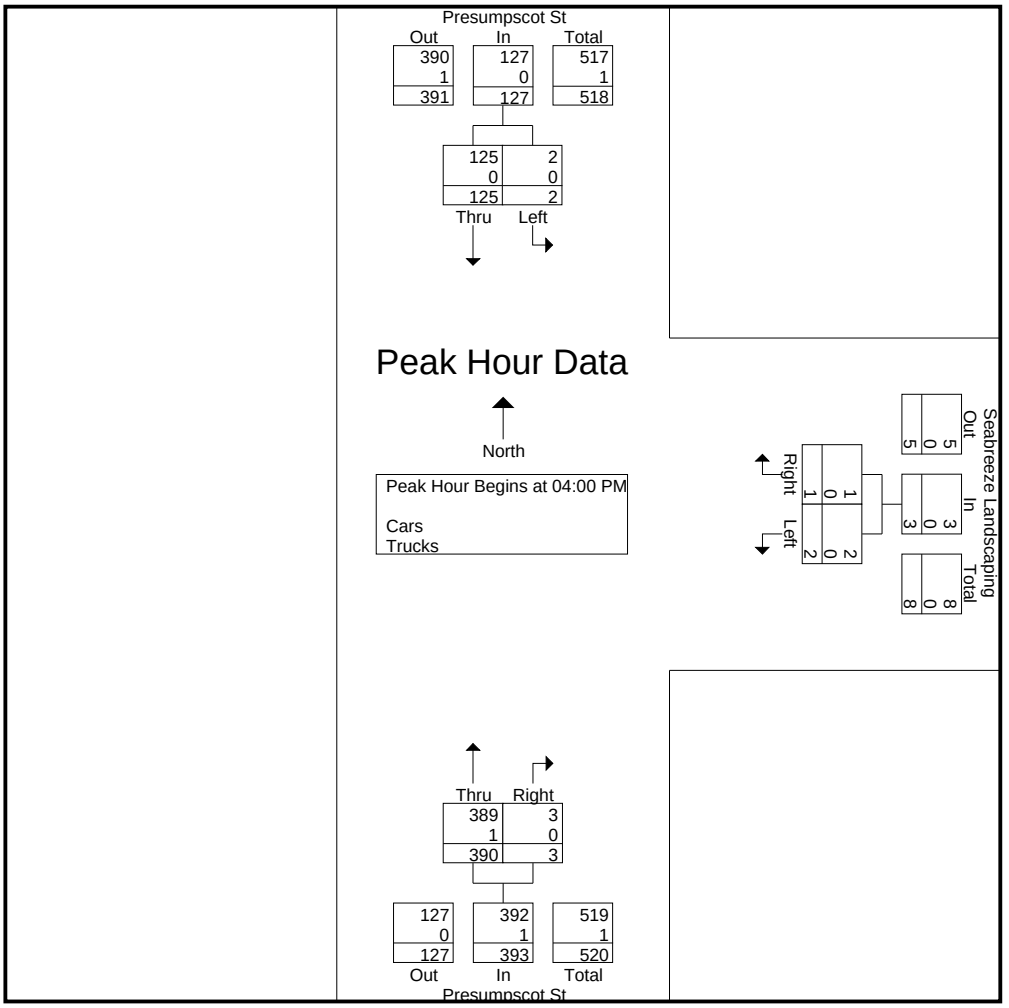
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 2

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**1**	32	33	0	**1**	1	101	**1**	102	136
04:15 PM	0	30	30	**2**	0	**2**	98	1	99	131
04:30 PM	1	23	24	0	0	0	78	0	78	102
04:45 PM	0	**40**	**40**	0	0	0	**113**	1	**114**	**154**
Total Volume	2	125	127	2	1	3	390	3	393	523
% App. Total	1.6	98.4		66.7	33.3		99.2	0.8		
PHF	.500	.781	.794	.250	.250	.375	.863	.750	.862	.849
Cars	2	125	127	2	1	3	389	3	392	522
% Cars	100	100	100	100	100	100	99.7	100	99.7	99.8
Trucks	0	0	0	0	0	0	1	0	1	1
% Trucks	0	0	0	0	0	0	0.3	0	0.3	0.2



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

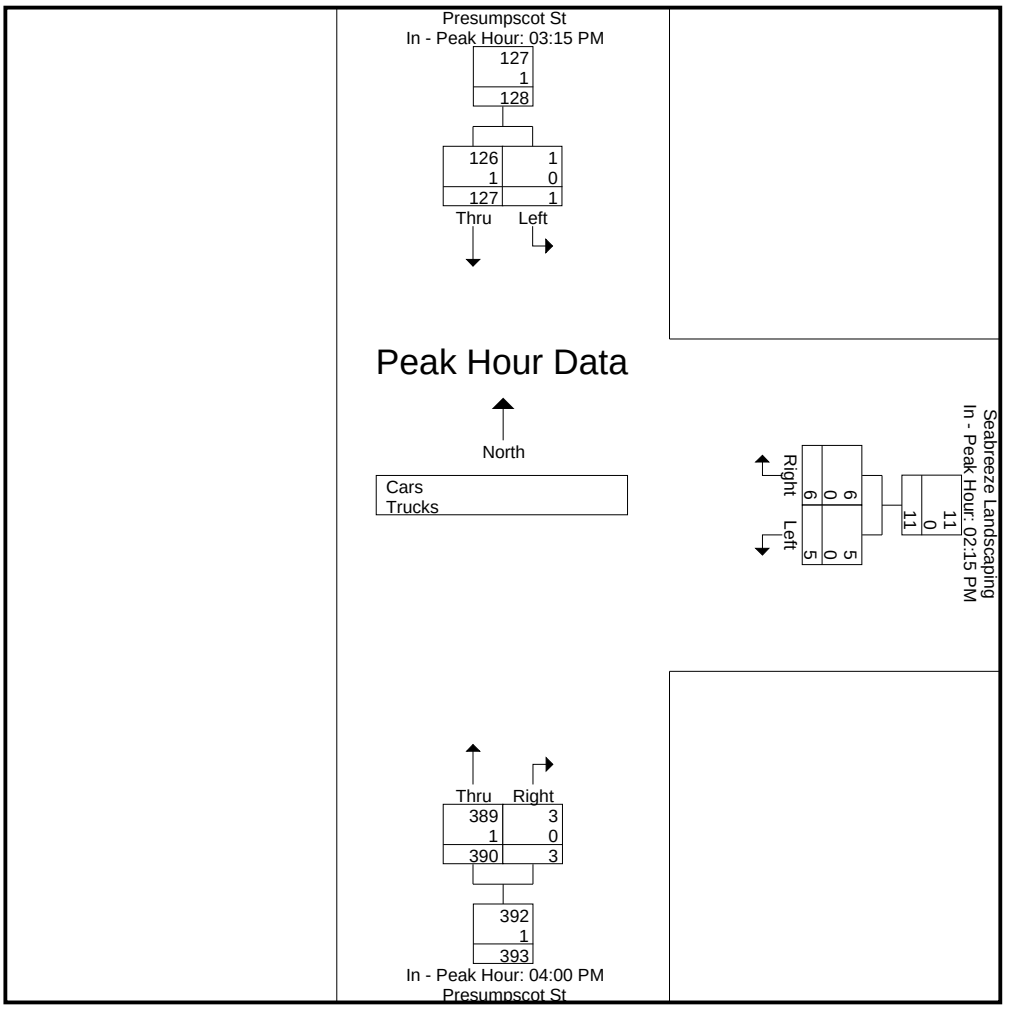
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 3

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:15 PM			02:15 PM			04:00 PM		
+0 mins.	0	32	32	0	1	1	101	**1**	102
+15 mins.	0	**33**	**33**	1	0	1	98	1	99
+30 mins.	0	30	30	**3**	**3**	**6**	78	0	78
+45 mins.	**1**	32	33	1	2	3	**113**	1	**114**
Total Volume	1	127	128	5	6	11	390	3	393
% App. Total	0.8	99.2		45.5	54.5		99.2	0.8	
PHF	.250	.962	.970	.417	.500	.458	.863	.750	.862
Cars	1	126	127	5	6	11	389	3	392
% Cars	100	99.2	99.2	100	100	100	99.7	100	99.7
Trucks	0	1	1	0	0	0	1	0	1
% Trucks	0	0.8	0.8	0	0	0	0.3	0	0.3



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Cars

	Presumpscot St From North		Seabreeze Landscaping From East		Presumpscot St From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
02:00 PM	0	26	0	0	38	1	65
02:15 PM	0	33	0	1	45	1	80
02:30 PM	0	25	1	0	41	2	69
02:45 PM	0	21	3	3	41	1	69
Total	0	105	4	4	165	5	283
03:00 PM	0	30	1	2	53	0	86
03:15 PM	0	32	0	0	61	3	96
03:30 PM	0	32	2	0	69	2	105
03:45 PM	0	30	3	2	81	1	117
Total	0	124	6	4	264	6	404
04:00 PM	1	32	0	1	101	1	136
04:15 PM	0	30	2	0	98	1	131
04:30 PM	1	23	0	0	78	0	102
04:45 PM	0	40	0	0	112	1	153
Total	2	125	2	1	389	3	522
Grand Total	2	354	12	9	818	14	1209
Apprch %	0.6	99.4	57.1	42.9	98.3	1.7	
Total %	0.2	29.3	1	0.7	67.7	1.2	

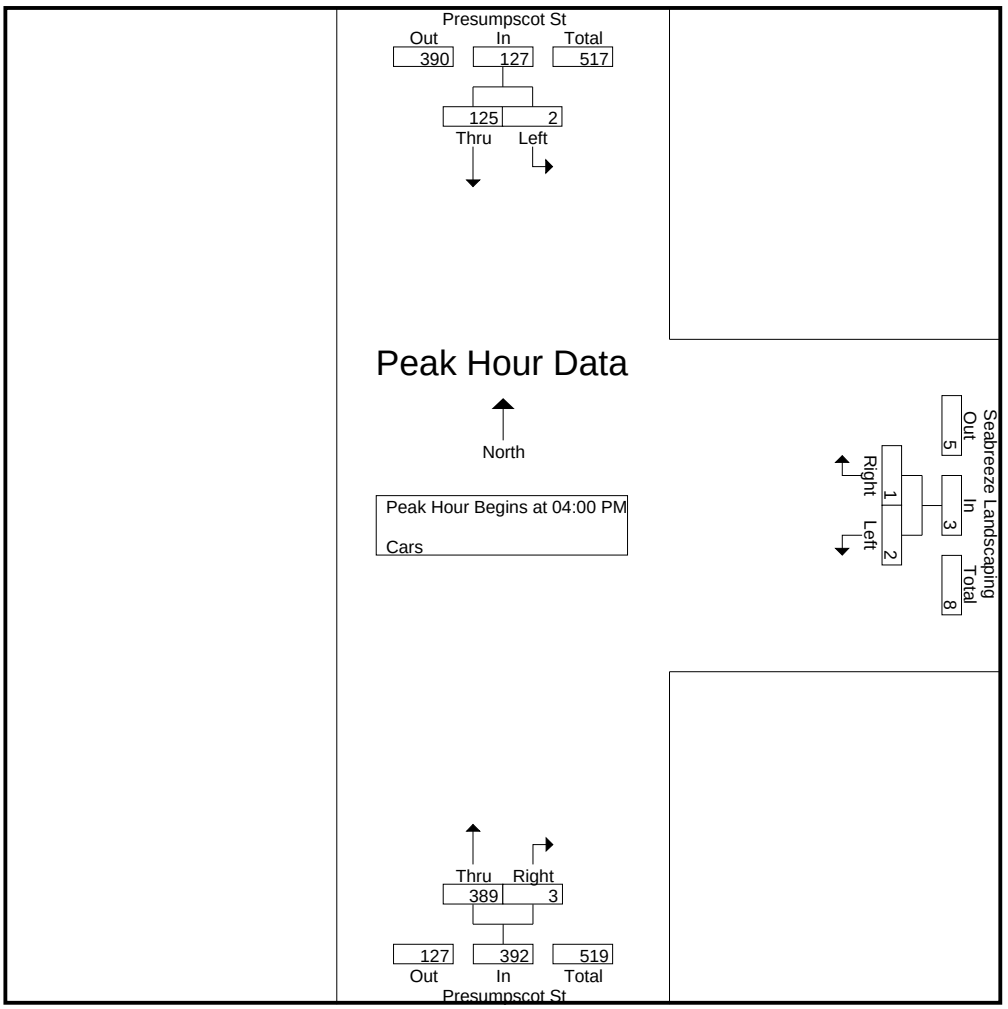
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 5

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**1**	32	33	0	**1**	1	101	**1**	102	136
04:15 PM	0	30	30	**2**	0	**2**	98	1	99	131
04:30 PM	1	23	24	0	0	0	78	0	78	102
04:45 PM	0	**40**	**40**	0	0	0	**112**	1	**113**	**153**
Total Volume	2	125	127	2	1	3	389	3	392	522
% App. Total	1.6	98.4		66.7	33.3		99.2	0.8		
PHF	.500	.781	.794	.250	.250	.375	.868	.750	.867	.853



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

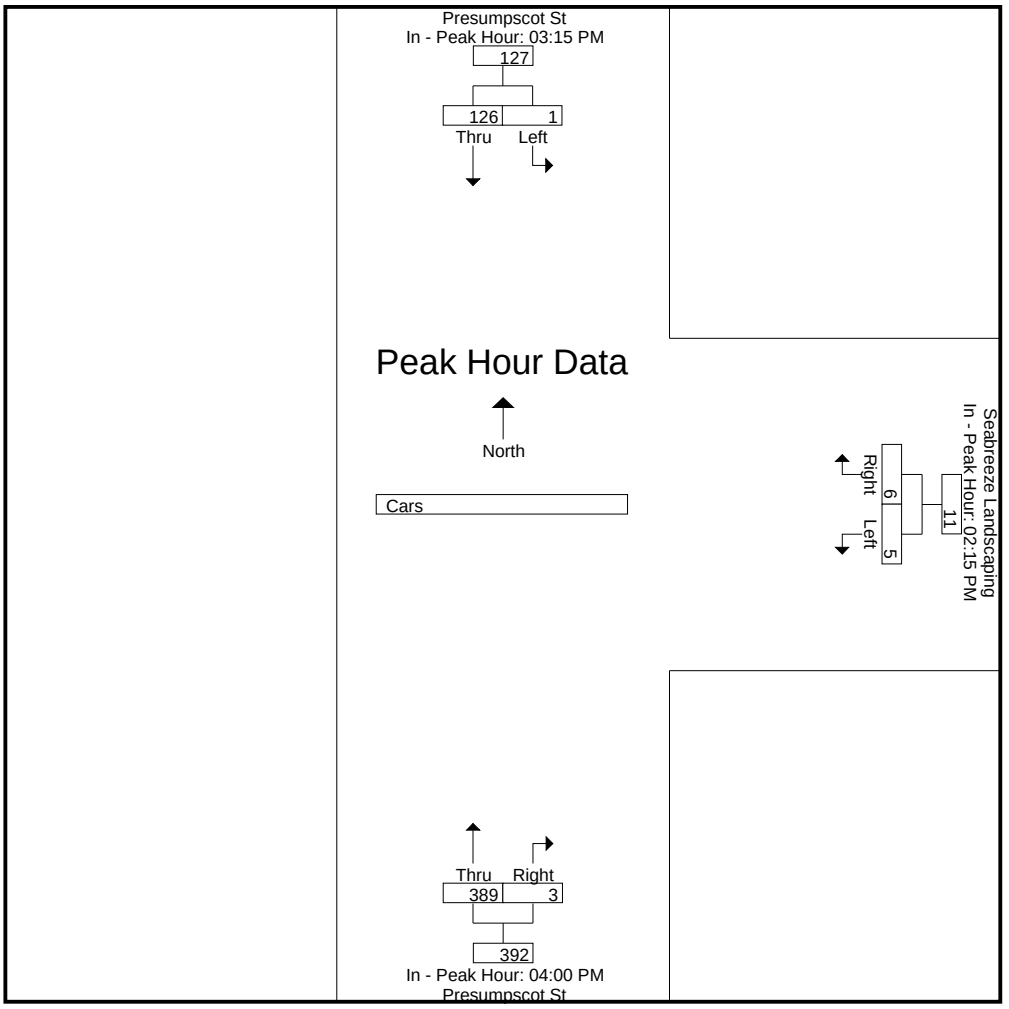
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 6

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:15 PM			02:15 PM			04:00 PM		
+0 mins.	0	**32**	32	0	1	1	101	**1**	102
+15 mins.	0	32	32	1	0	1	98	1	99
+30 mins.	0	30	30	**3**	**3**	**6**	78	0	78
+45 mins.	**1**	32	**33**	1	2	3	**112**	1	**113**
Total Volume	1	126	127	5	6	11	389	3	392
% App. Total	0.8	99.2		45.5	54.5		99.2	0.8	
PHF	.250	.984	.962	.417	.500	.458	.868	.750	.867



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Trucks

	Presumpscot St From North		Seabreeze Landscaping From East		Presumpscot St From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
02:00 PM	0	0	0	0	0	0	0
02:15 PM	0	1	0	0	0	0	1
02:30 PM	0	1	0	0	0	0	1
02:45 PM	0	0	0	0	0	0	0
Total	0	2	0	0	0	0	2
03:00 PM	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0
03:30 PM	0	1	0	0	0	0	1
03:45 PM	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	1
04:00 PM	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	1	0	1
Total	0	0	0	0	1	0	1
Grand Total	0	3	0	0	1	0	4
Apprch %	0	100	0	0	100	0	
Total %	0	75	0	0	25	0	

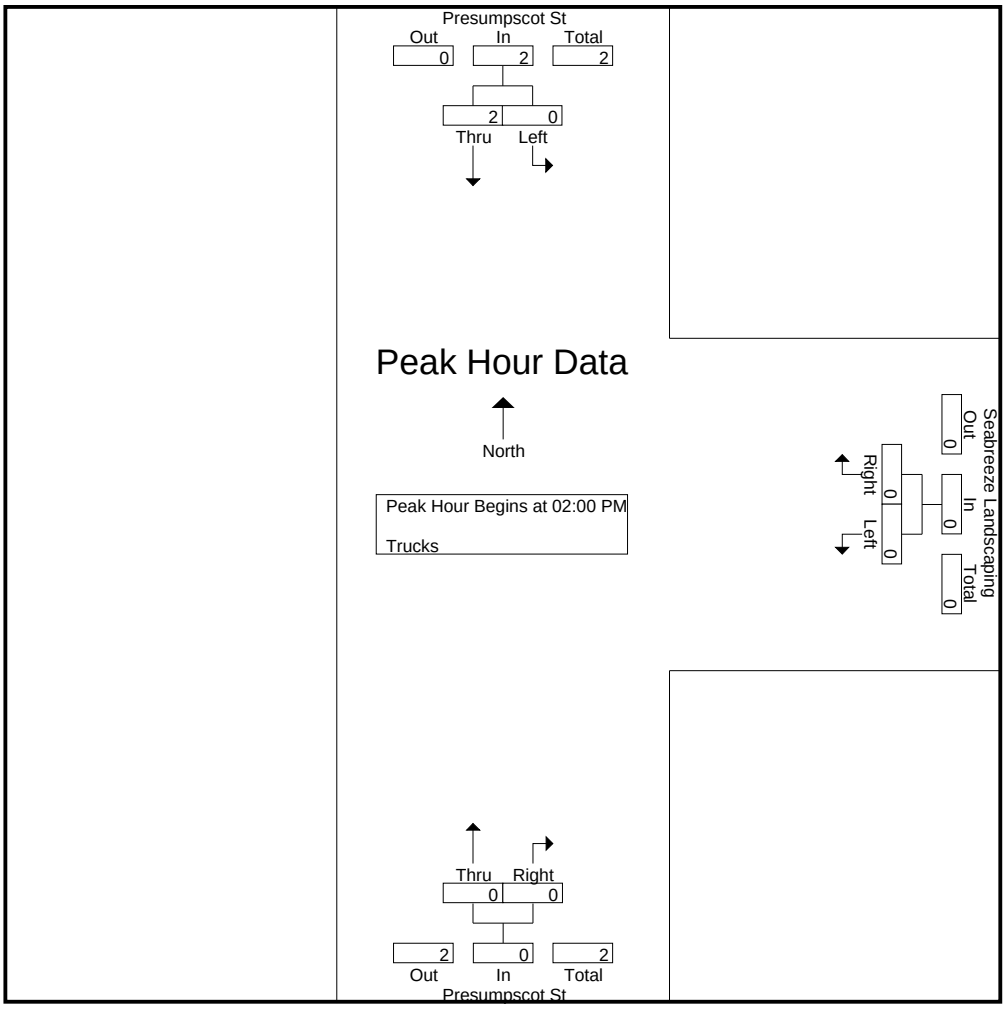
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 8

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:00 PM										
02:00 PM	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	**1**	**1**	0	0	0	0	0	0	**1**
02:30 PM	0	1	1	0	0	0	0	0	0	1
02:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	2	0	0	0	0	0	0	2
% App. Total	0	100		0	0		0	0		
PHF	.000	.500	.500	.000	.000	.000	.000	.000	.000	.500



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

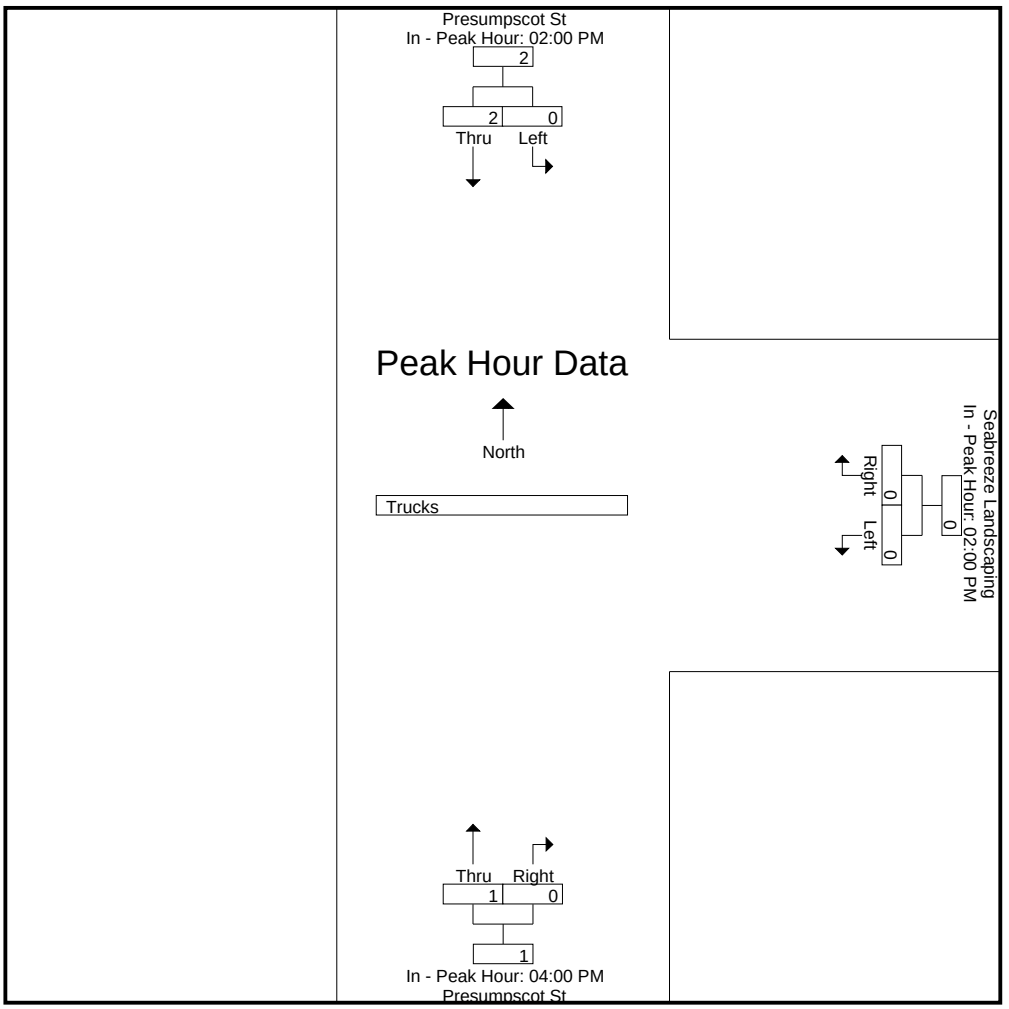
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 9

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:00 PM			02:00 PM			04:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	**1**	**1**	0	0	0	0	0	0
+30 mins.	0	1	1	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	**1**	0	**1**
Total Volume	0	2	2	0	0	0	1	0	1
% App. Total	0	100		0	0		100	0	
PHF	.000	.500	.500	.000	.000	.000	.250	.000	.250



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Bikes Peds

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	1	0	0	0	0	0	0	0	0	1	1
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	0	1	1
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	0	0	0	0	0	0	0	1	1
Apprch %	0	100		0	0		0	0				
Total %	0	100		0	0		0	0		0	100	

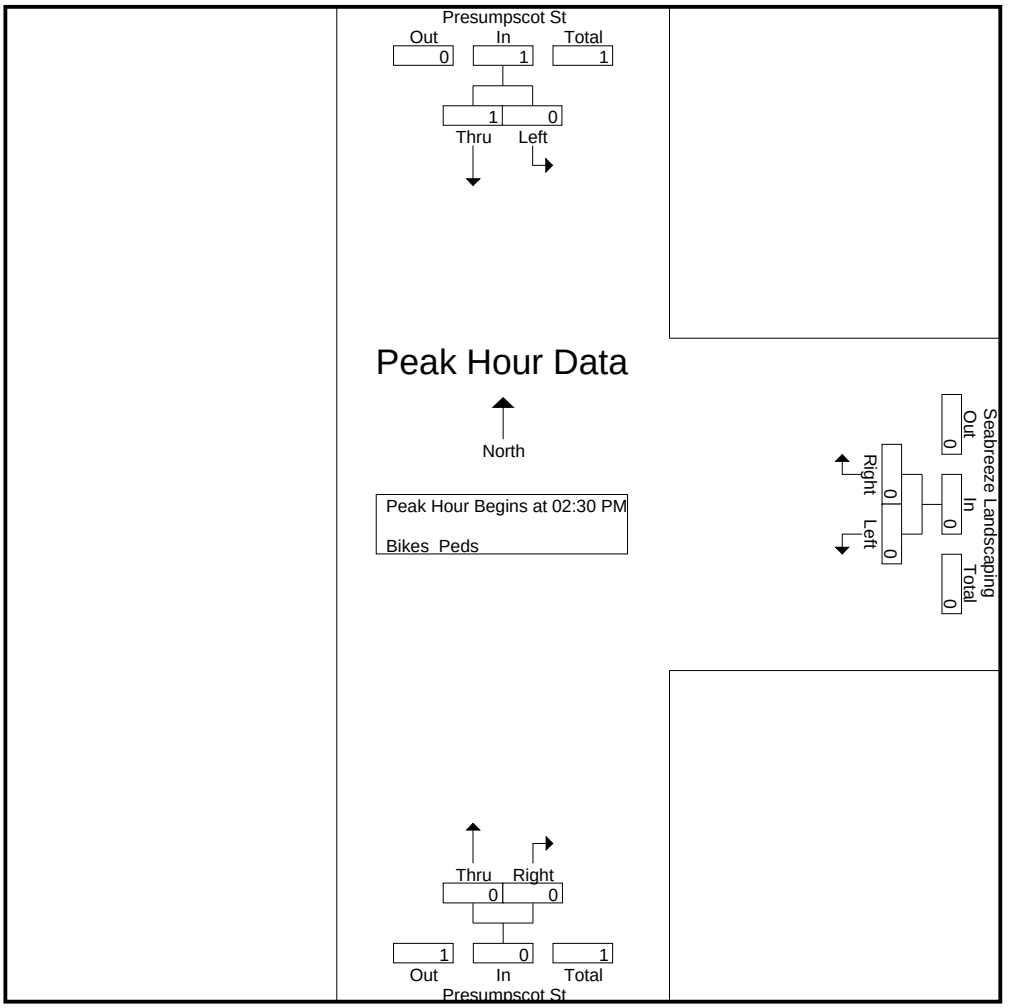
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 11

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:30 PM										
02:30 PM	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	**1**	**1**	0	0	0	0	0	0	**1**
Total Volume	0	1	1	0	0	0	0	0	0	1
% App. Total	0	100		0	0		0	0		
PHF	.000	.250	.250	.000	.000	.000	.000	.000	.000	.250



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

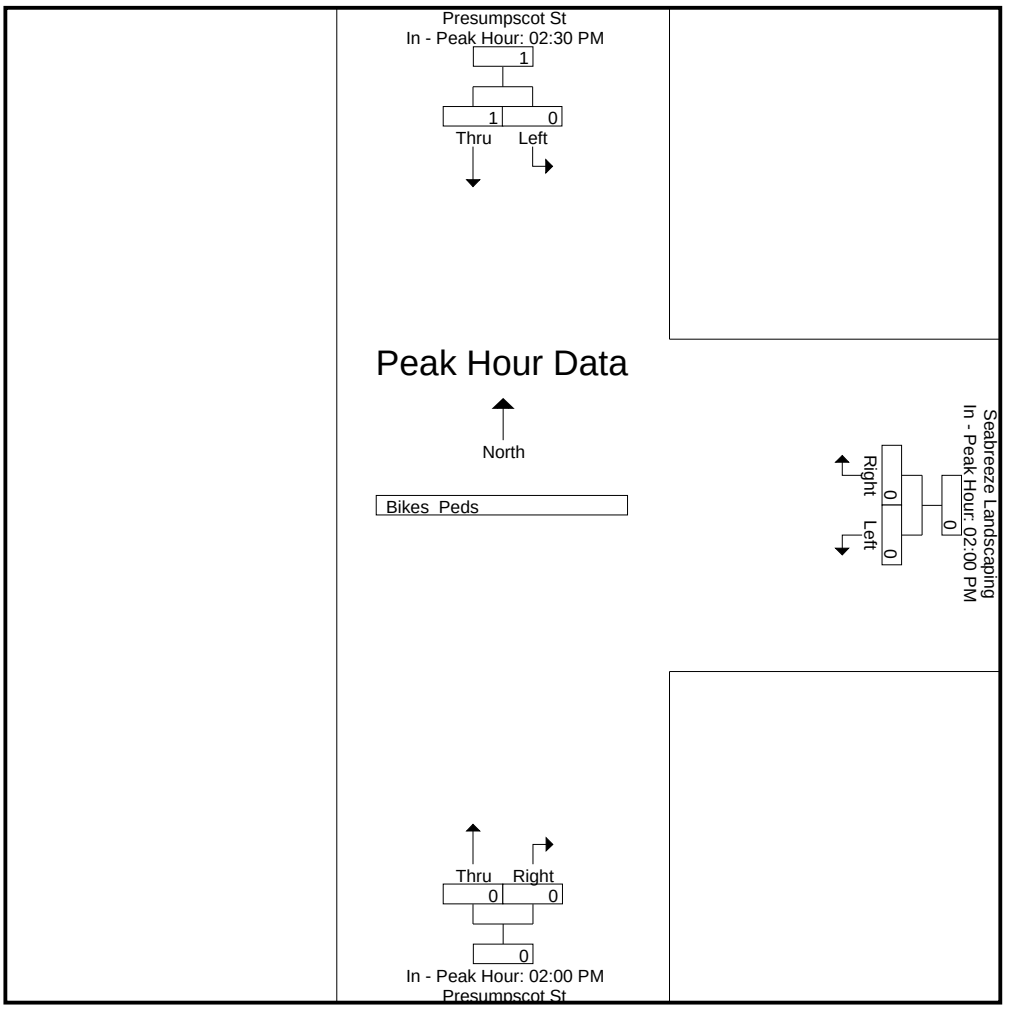
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 12

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:30 PM			02:00 PM			02:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	**1**	**1**	0	0	0	0	0	0
Total Volume	0	1	1	0	0	0	0	0	0
% App. Total	0	100		0	0		0	0	
PHF	.000	.250	.250	.000	.000	.000	.000	.000	.000



10: Transportation

Access and Circulation (14-526(a)2a)

- Access and internal circulation, addressing ADA access

  (i) The development provides safe and reasonable site access and provisions for internal circulation for all users of the site and complies with the standards set forth in Section 1 of the Technical Manual. Please see the site plan.

- Access and egress impacts on traffic flows

  (ii) The points of access and egress are located to avoid conflicts with the existing turning movements and traffic flows. Please see the site plan.

- Description and use of drive up features, if applicable.

  (iii) There are no public drive-up features on the site. Drive-up facilities are limited to a fueling area located at the rear of the building. Stacking and vehicular circulation on adjoining streets is not affected by the private fueling area.

11: Transportation

Loading and Servicing (14-526 (a) 2 b)

- Load and servicing needs, route and travel way geometrics for deliveries
- Turning templates for delivery vehicles, if applicable

(i) The site will be serviced occasionally by delivery vehicles. Access to the site includes a clear route permitting safe turning and backing for the anticipated vehicle lengths that will not impede site access, vehicle circulation, pedestrian movement, or affect the designated parking.

12: Transportation

Sidewalks (14-526 (a) 2 c)

- Sidewalks and condition along street frontages and internal walkways

  (i) No sidewalks are proposed as part of the proposed site development. Please see Waiver Table for specifics.

  (ii) Not applicable. There is no existing sidewalk adjacent to this project.

  (iii) Not applicable. Internal sidewalks are not proposed for this project. A request from the standard is located in the enclosed Waiver Table. It is anticipated that the site will be accessed by fleet vehicles, employees, occasional delivery vehicles, not pedestrians. Public sidewalks are not available along this section of Riverside Industrial Parkway.

- Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)

  Building access walks including ADA ramps and details are shown on the enclosed site plans. Public walks are not proposed for this project.

13: Transportation

Public Transit (14-526 (a) 3), if applicable

- Existing available transit services
- Proposed site plan design details, such as easement, pad base, and shelter

Not applicable. The project does not include residential development.

14: Transportation

Off-Street Parking: Vehicle & Motorcycle/Scooter) (14-526 (a) 4 a and c)

- Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements

  a. The proposed parking area is appropriate for the intended use/zone and the spaces/aisles meet the dimensional standard as detailed in Section 1 of the City Technical Standard. The site includes paved parking and gravel work and storage yard area. Gravel areas will be maintained to avoid erosion or ponding. Please see the site plans.

  b. The bicycle parking spaces proposed meet the requirements of this section requiring 2 bicycle spaces for every ten (10) vehicle parking spaces.

  c. Motorcycle/scooter parking is available on the site. Please see the site plan.

- Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan

  The site is accessed by a single entry drive designed at 90 degrees to Riverside Industrial Parkway. Street and vertical grades for the proposed entry have been designed in compliance with applicable City Standards. The parking lot layout is shown on the site plan.

15: Transportation

Bicycle Parking (14-526 (a) 4 b)

- Address bicycle parking requirements and identify locations on-site

  b. Ten (10) secure bicycle parking spaces are proposed for the project. The bicycle parking location is shown on the site plan and the number of spaces meets the requirements of this section.

- Constuction details for bike racks (Technical Manual, Section 1)

  A bike rack detail is shown on the enclosed detail plan.

16: Transportation

Snow Storage (14-526 (a) 4 d)

- Management plan for snow removal and locate snow storage areas on plan

(i) The designated snow storage areas are shown on the site plan.

(ii) The snow storage areas will not adversely impact stormwater management systems and do not encroach on pedestrian, parking or accessways.

17: Transportation

Traffic Demand Management (TDM) (14-526 (a) 5)

- Develop TDM with Trip Reduction Targets and Strategies

Not applicable. The project does not meet the types of development required to implement a TMD Plan.

18: Environmental and Landscape Features

Preservation of Significant Natural Features (14-526 (b) 1), if applicable

The proposed project site is an undeveloped property. The project includes a stream crossing and small areas of freshwater wetland impact.

- Trees, plants, habitats listed on State or Federal list of endangered or threatened

  (i) Per the State of Maine Department of Agriculture, Conservation and Forestry Natural Areas Program, there are no known mapped significant natural features within the project site. Reference is made to the enclosed reply received from MNAP.

  (ii) Per the U.S. Department of Interior, Fish and Wildlife Service, critical habitats identified within the project area is limited to the threatened Northern Long-eared bat *Myotis septentionalis*. No know hibernacula occurs on the site and tree removal will not take place during the spring-summer bat pup-rearing season. See attached letter from US Fish and Wildlife Service.

- High and moderate value waterfowl and wading habitat

  (iii) A site review has been performed by the MDIFW and the reply and location map is attached. No high or moderate waterfowl and wading habitat occurs within the project site.

- Aquifers on Casco Bay Islands

  (iv) Not applicable.

- Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains)

  (v) A stream and freshwater wetland area located within the proposed development area has been field located by Sebago Technics, Inc. The design as presented will impact ±7,448 square feet of freshwater wetland area and a stream crossing is required to gain access to the interior lot development area. The information is shown on the plan set enclosed in this submittal package. Impacts are being reviewed concurrently with applicable state and federal agencies. Approvals will be forwarded to the City upon receipt.

  The project site is not located in a flood plain as shown on the City maps generated from 1986 FEMA flood boundaries. A copy of the City of Portland GIS Map Viewer-Flood is enclosed in this section.

- Proposed preservation areas and protection measures

  The area outside of the proposed development area will remain wooded.

- Documentation from environmental consultants determinations from applicable state agencies

  Reference is made to the aforementioned correspondence regarding natural features.

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE 04333

PAUL R. LEPAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

June 25, 2018

Stefanie Nichols
Sebago Technics
75 John Roberts Road, Suite 4A
South Portland, ME 04106

Via email: snichols@sebagotechnics.com

Re: Rare and exemplary botanical features in proximity to: #16360, Seabreeze Development, 250 Riverside Industrial Parkway, Portland, Maine

Dear Ms Nichols:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received June 21, 2018 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Portland, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM

DEPARTMENT OF Agriculture Conservation & Forestry

PHONE: (207) 287-8044
FAX: (207) 287-8040
WWW.MAINE.GOV/DACF/MNAP

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,



Kristen Puryear | Ecologist | Maine Natural Areas Program
207-287-8043 | kristen.puryear@maine.gov

Rare and Exemplary Botanical Features within 4 miles of
Project: Seabreeze Development, 250 Riverside Industrial Parkway, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Allegheny Vine						
	E	S1	G4	1860-10	9	Rocky summits and outcrops (non-forested, upland),Dry barrens (partly forested, upland)
American Sea-blite						
	T	S2	G5	1932-09-12	5	Tidal wetland (non-forested, wetland)
	T	S2	G5	2011-08-15	17	Tidal wetland (non-forested, wetland)
Bottlebrush Grass						
	SC	S3	G5	1905-09-13	10	Hardwood to mixed forest (forest, upland)
Broad Beech Fern						
	SC	S2	G5	1872-08	15	Hardwood to mixed forest (forest, upland)
	SC	S2	G5	2001-08-28	28	Hardwood to mixed forest (forest, upland)
Clothed Sedge						
	E	S1	G5	2000-06-06	5	Dry barrens (partly forested, upland)
Columbia Water-meal						
	SC	S2	G5	2002-08-04	2	Open water (non-forested, wetland)
Ebony Spleenwort						
	SC	S2	G5	1910-06-06	10	Rocky summits and outcrops (non-forested, upland),Hardwood to mixed forest (forest, upland)
Engelmann's Spikerush						
	PE	SH	G4G5	1916-08-31	2	Open wetland, not coastal nor rivershore (non-forested, wetland)
Enriched Northern Hardwoods Forest						
	<null>	S3	GNR	2001-08-28	34	Hardwood to mixed forest (forest, upland)
Fern-leaved False Foxglove						
	SC	S3	G5	1902-09-02	13	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)

Rare and Exemplary Botanical Features within 4 miles of
Project: Seabreeze Development, 250 Riverside Industrial Parkway, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Great Blue Lobelia						
	PE	SX	G5	1905-09	3	Forested wetland,Non-tidal rivershore (non-forested, seasonally wet)
Hollow Joe-pye Weed						
	SC	S2	G5?	2014-06-18	24	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
	SC	S2	G5?	2007-10-22	18	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
	SC	S2	G5?	2011-08-04	19	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
Horned Pondweed						
	SC	S2	G5	1913-09-13	9	Tidal wetland (non-forested, wetland)
Marsh Milkwort						
	PE	SH	G5T4	1903-08-18	1	Dry barrens (partly forested, upland),Open wetland, not coastal nor rivershore (non-forested, wetland)
Missouri Rockcress						
	T	S1	G5	1905-06-11	5	Rocky summits and outcrops (non-forested, upland),Hardwood to mixed forest (forest, upland)
Mountain Honeysuckle						
	E	S2	G5	2014-08-03	14	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S2	G5	2007-10-05	11	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S2	G5	2015-07-07	17	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Pitch Pine Woodland						
	<null>	S3	G2	2005-12-08	28	Rocky summits and outcrops (non-forested, upland)
Small Reed Grass						
	SC	S3	G5	2011-08-28	18	Old field/roadside (non-forested, wetland or upland)

Rare and Exemplary Botanical Features within 4 miles of
Project: Seabreeze Development, 250 Riverside Industrial Parkway, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Spotted Pondweed						
	T	S1	G5	1995-10-01	3	Open water (non-forested, wetland)
Tidal Marsh Estuary Ecosystem						
	<null>	S3	GNR	2011-08-25	8	Tidal wetland (non-forested, wetland)
Upper Floodplain Hardwood Forest						
	<null>	S3	GNR	2010-06-23	20	Forested wetland
Upright Bindweed						
	T	S2	G4G5	2007-06-28	5	Dry barrens (partly forested, upland),Old field/roadside (non-forested, wetland or upland)
Variable Sedge						
	E	S1	G3	1911	8	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S1	G3	1911-06-29	9	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Vasey's Pondweed						
	SC	S2	G4	1901-08-04	7	Open water (non-forested, wetland)
Wild Garlic						
	SC	S2	G5	1918-07-16	6	Forested wetland,Hardwood to mixed forest (forest, upland)

STATE RARITY RANKS

S1 Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.

S2 Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

S3 Rare in Maine (20-100 occurrences).

S4 Apparently secure in Maine.

S5 Demonstrably secure in Maine.

SU Under consideration for assigning rarity status; more information needed on threats or distribution.

SNR Not yet ranked.

SNA Rank not applicable.

S#? Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

G1 Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.

G2 Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

G3 Globally rare (20-100 occurrences).

G4 Apparently secure globally.

G5 Demonstrably secure globally.

GNR Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered** and **Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

E ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.

T THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

SC SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.

PE Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- **Size**: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- **Condition**: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- **Landscape context**: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
http://www.maine.gov/dacf/mnap

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
Phone: (207) 469-7300 Fax: (207) 902-1588
http://www.fws.gov/mainefieldoffice/index.html

In Reply Refer To:
Consultation Code: 05E1ME00-2018-SLI-0861
Event Code: 05E1ME00-2018-E-01754
Project Name: Seabreeze

June 20, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies the threatened, endangered, candidate, and proposed species and designated or proposed critical habitat that may occur within the boundary of your proposed project or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC Web site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the Endangered Species Consultation Handbook at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

This species list also identifies candidate species under review for listing and those species that the Service considers species of concern. Candidate species have no protection under the Act but are included for consideration because they could be listed prior to completion of your project. Species of concern are those taxa whose conservation status is of concern to the Service (i.e., species previously known as Category 2 candidates), but for which further information is needed.

If a proposed project may affect only candidate species or species of concern, you are not required to prepare a Biological Assessment or biological evaluation or to consult with the Service. However, the Service recommends minimizing effects to these species to prevent future conflicts. Therefore, if early evaluation indicates that a project will affect a candidate species or species of concern, you may wish to request technical assistance from this office to identify appropriate minimization measures.

Please be aware that bald and golden eagles are not protected under the Endangered Species Act but are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). Projects affecting these species may require development of an eagle conservation plan: http://www.fws.gov/windenergy/eagle_guidance.html Information on the location of bald eagle nests in Maine can be found on the Maine Field Office Web site: http://www.fws.gov/mainefieldoffice/Project%20review4.html

Additionally, wind energy projects should follow the wind energy guidelines: http://www.fws.gov/windenergy/ for minimizing impacts to migratory birds and bats. Projects may require development of an avian and bat protection plan.

Migratory birds are also a Service trust resource. Under the Migratory Bird Treaty Act, construction activities in grassland, wetland, stream, woodland, and other habitats that would result in the take of migratory birds, eggs, young, or active nests should be avoided. Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g.,

cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm and at: http://www.towerkill.com; and at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
(207) 469-7300

Project Summary

Consultation Code: 05E1ME00-2018-SLI-0861

Event Code: 05E1ME00-2018-E-01754

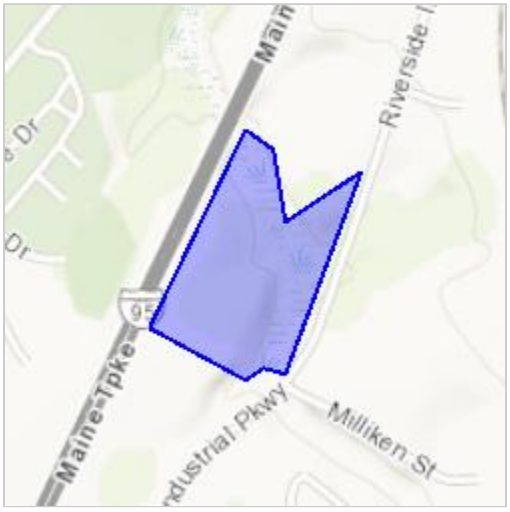
Project Name: Seabreeze

Project Type: DEVELOPMENT

Project Description: 250 Riverside Industrial Parkway - undeveloped parcel
Proposed new building, access and other site improvements
Timing 2018-19

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.70798281079453N70.30863366966179W



Counties: Cumberland, ME

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

CHANDLER E. WOODCOCK
COMMISSIONER

July 13, 2018

Stefanie Nichols
Sebago Technics
75 John Roberts Road, Suite 1A
Portland, ME 04101

RE: Information Request - 250 Riverside Industry Parkway, Portland

Dear Stefanie:

Per your request received June 21, 2018, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and fisheries habitat concerns within the vicinity of the *250 Riverside Industry Parkway Project* in Portland. For purposes of this review we are assuming tree clearing will be part of your project.

Our Department has not mapped any Essential Habitats that would be directly affected by your project.

Endangered, Threatened, and Special Concern Species

Bats

Of the eight species of bats that occur in Maine, the three *Myotis* species are protected under Maine's Endangered Species Act (MESA) and are afforded special protection under 12 M.R.S §12801 - §12810. The three *Myotis* species include little brown bat (State Endangered), northern long-eared bat (State Endangered), and eastern small-footed bat (State Threatened). The five remaining bat species are listed as Special Concern: big brown bat, red bat, hoary bat, silver-haired bat, and tri-colored bat.

While a comprehensive statewide inventory for bats has not been completed, based on historical evidence it is likely that several of these species occur within the project area during migration and/or the breeding season. We recommend that you contact the U.S. Fish and Wildlife Service--Maine Fish and Wildlife Complex (Wende Mahaney, 207-902-1569) for further guidance, as the northern long-eared bat is also listed as a Threatened Species under the Federal Endangered Species Act. Otherwise, our Agency does not anticipate significant impacts to any of the bat species as a result of this project.

Significant Wildlife Habitat

Significant Vernal Pools

At this time, MDIFW Significant Wildlife Habitat (SWH) maps indicate no known presence of SWHs within the project area, which include Waterfowl and Wading Bird Habitats, Seabird Nesting Islands, Shorebird Areas, and Significant Vernal Pools. However, a comprehensive statewide inventory for

Significant Vernal Pools has not been completed. Therefore, we recommend that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential performance standard requirements for off-site Significant Vernal Pools, assuming such pools are located on land owned or controlled by the applicant. Once surveys are completed, our Department will need to review and verify any vernal pool data prior to final determination of significance.

Fisheries Habitat

Without details, it is difficult to know what impacts your project may have on the mapped streams within the search area. That being said, MDIFW makes the following general recommendations as they pertain to streams.

We generally recommend that a 100-foot undisturbed vegetated buffers be maintained along streams. Buffers should be measured from the edge of stream or associated fringe and floodplain wetlands. Maintaining and enhancing buffers along streams that support coldwater fisheries is critical to the protection of water temperatures, water quality, natural inputs of coarse woody debris, and various forms of aquatic life necessary to support conditions required by many fish species. Stream crossings should be avoided, but if a stream crossing is necessary, or an existing crossing needs to be modified, it should be designed to provide full fish passage. Small streams, including intermittent streams, can provide crucial rearing habitat, cold water for thermal refugia, and abundant food for juvenile salmonids on a seasonal basis and undersized crossings may inhibit these functions. Generally, MDIFW recommends that all new, modified, and replacement stream crossings be sized to span at least 1.2 times the bankfull width of the stream. In addition, we generally recommend that stream crossings be open bottomed (i.e. natural bottom), although embedded structures which are backfilled with representative streambed material have been shown to be effective in not only providing habitat connectivity for fish but also for other aquatic organisms. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils from construction activities can travel significant distances as well as transport other pollutants resulting in direct impacts to fish and fisheries habitat. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,



John Perry
Environmental Review Coordinator



Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: raremussels (Version 1)

N
W
E
S

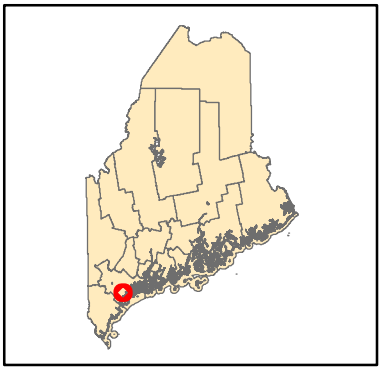
Maine Department of Inland Fisheries and Wildlife

0 0.125 0.25 0.5 0.75 1 Miles

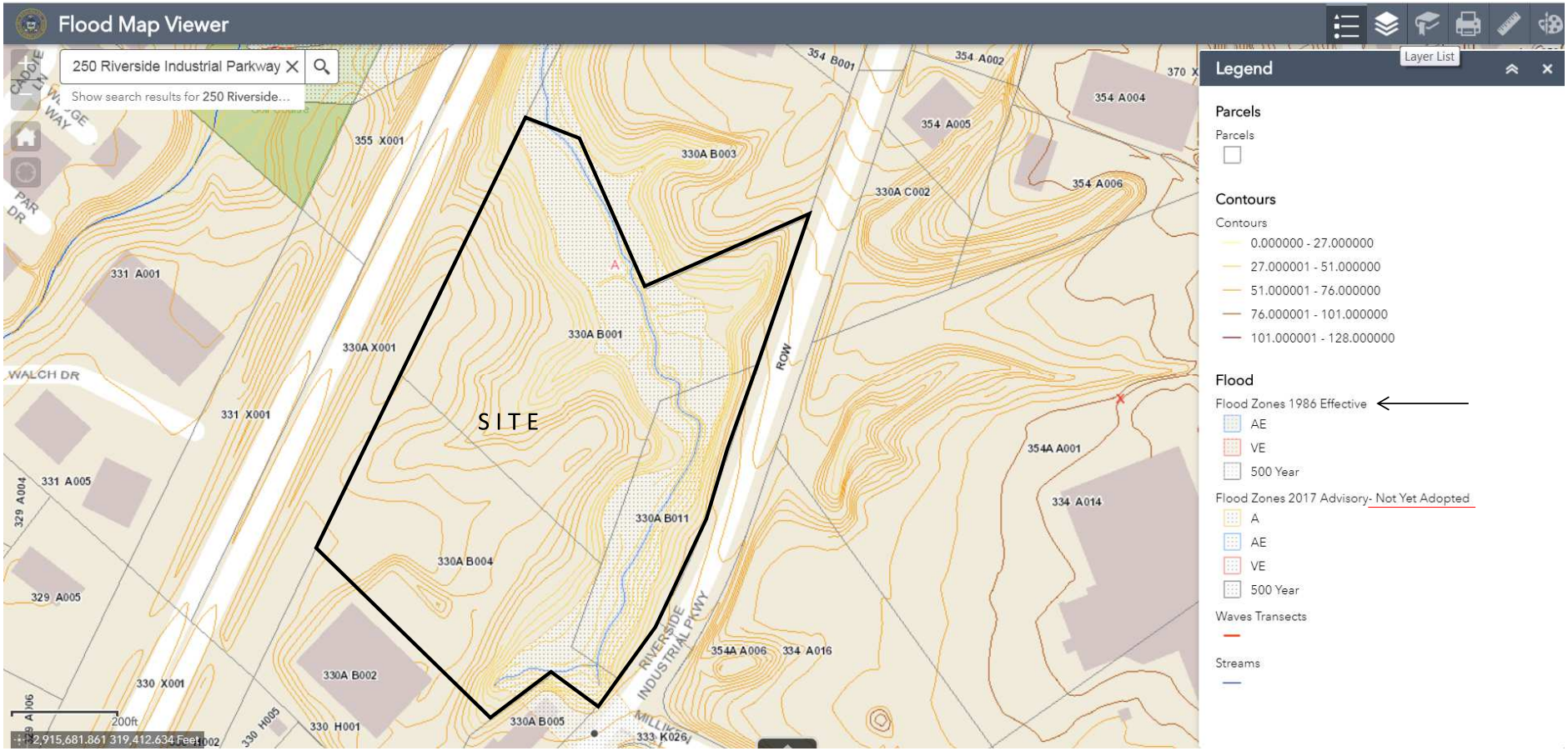
Projection: UTM, NAD83, Zone 19N

Date: 6/26/2018

- ProjectPolys
- ProjectSearchAreas
- ETSc Environmental Review Polygons



Reference: City of Portland GIS Map Viewer, http://portlandme.maps.arcgis.com/home/index.html



19: Environmental and Landscape Features

Landscaping and Landscape Preservation (14-526 (b) 2a)

- Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4)
- Protection measures of existing vegetation during construction
- Protection measures within Shoreland Zone, if applicable

(i) Existing trees will be retained to the greatest extent practicable. Preserved trees will be considered as part of the site landscaping requirements. Please see the Landscape Plan.

(ii) Trees with a 10-inch or greater DBH located within the zoning setbacks will be preserved to meet the minimum 30% preservation threshold excepting invasive species, and City identified unsalvageable trees, as allowed.

(iii) Vegetation will be protected during site construction in accordance with the tree preservation standards found in Section 4 of the Technical Manual.

(iv) No waivers from the preservation of existing vegetation are requested.

(v) The proposed project has been designed in accordance with the provisions of the Div. 26 Shoreland Zone Regulations and Sections 5 and 8 of the Technical Manual and applicable Maine DEP regulations.

20: Environmental and Landscape Features

Site Landscaping (14-526 (b) 2 b)

- Screening and buffering of service areas and between non-residential and residential uses

  Not applicable

- Planting plans with plant schedule and sizes (Technical Manual, Section 4)

(i)(a) The landscape materials storage area will be screened from 1-95 by a dense installation of evergreens. The development area is not visible from a public sidewalk or street. The abutting property to the south is under the same ownership and the applicant/owner does not desire visual screening from one site to the other.

(i)(b) The applicant requests that the existing vegetation on the site be counted toward the understory setback planting requirement. Disturbed areas within the disturbed area will be seeded with New England Conservation Mix providing a permanent cover of grasses and wildflowers for erosion control, wildlife habitat value and aesthetics.

(i)(c) Not applicable. The development does not abut a residential zone.

(i)(d) Not applicable. The site development is not residential.

Please see the Landscape Plan for specific information on the planting plan.

21: Environmental and Landscape Features

Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable

- Landscaped islands within parking areas (Technical Manual, Section 4)

Landscaped islands are not included in the site design. Development of the site requiring 50 parking spaces requires 20 trees or 10 trees/30 shrubs located within curbed landscaped islands.

The applicant asks that the landscaped island requirement be waived with the understanding that a contribution to the City of Portland Tree fund is required. See enclosed Waiver Table.

22: Environmental and Landscape Features

Street Trees (14-526 (b) 2 B iii)

- Existing Heritage or Feature Trees on site and measures to preserve

No existing Heritage or Feature Trees have been located on the site.

- Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable

(iii)(b) The applicant proposes an allowed alternative measures be counted towared the street tree requirement. The applicant proposes to preserve existing healthy trees that are six (6) inches or more in caliper, visible from the right-of-way and on the site within twenty feet of the property line in the area immediately adjacent to the entry drive location extending a distance of 100 linear feet on each side of the proposed landscaped entrance. See enclosed Waiver Table.

Please see the Landscape Plan for proposed planting information.

23: Environmental and Stormwater

Water Quality, Stormwater Management and Erosion Control (14-526 (b) 3 a)

The proposed site development has been designed in accordance with the City and Maine DEP Chapter 500 Stormwater standards. Please refer to the Stormwater Management report and plans included in this submittal.

SEBAGO
TECHNICS
CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

STORMWATER MANAGEMENT PLAN

250 Riverside Industrial Parkway
Portland, Maine 04101

Prepared for

Two Eisenhower Drive, LLC
PO Box 1120
Portland, ME 04104

July 2018

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Appendices

A. Watershed Plans
B. Pre-Development Stormwater Modeling
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D. Stormwater Quality Calculations
E. Inspection, Maintenance, and Housekeeping Plan
F. Soil Survey

STORMWATER MANAGEMENT PLAN
Riverside Industrial Parkway
Portland, Maine

EXECUTIVE SUMMARY

Two Eisenhower Drive, LLC proposes to construct a 11,200 square-foot building, with an associated access drive, concrete pads, paved and gravel parking areas. The project site is located on a 12.4-acre parcel on Riverside Industrial Parkway. The proposed site development will include approximately 146382 square feet (3.36 acres) of new impervious parking areas, driveway and building area. The projects total developed area will be about 219,262 square feet (5.03 acres).

In order to meet City and MDEP requirements, the stormwater management system has been designed to treat at least 95% of new on-site impervious surfaces, and at least 80% of new on-site developed areas. Furthermore, the post development peak rates of runoff will be less than the pre-development peak rates of runoff during the 2, 10, and 25-year storm events.

Since stormwater drainage from the project site is tributary to Dole Brook, an Urban Impaired Stream identified by the Maine Department of Environmental Protection (MDEP), the development will be required to contribute to the Compensation Fee Utilization Program (CFUP) for Dole Brook. Additionally, an NRPA permit will be filed for stream impact resulting from the proposed access drive, and additional wetland impact within the project site.

STORMWATER MANAGEMENT PLAN
Riverside Industrial Parkway
Portland, Maine

I. Introduction

This Stormwater Management Plan has been prepared to address the potential impacts associated with this project due to the proposed modification in stormwater runoff characteristics. The stormwater management controls that are outlined in this plan have been designed based on commonly accepted engineering methods and to comply with applicable regulatory requirements.

II. Existing Conditions

The site consists of a 12.4-acre undeveloped parcel with frontage on Riverside Industrial Parkway. The site is located directly across from Milliken Street and abuts Titan Mechanical, Inc to the south and ABF Freight to the north.

A. Land Cover

The site is mostly undeveloped and is predominately wooded. Some of the site has been cleared, but for purposes of this study we have assumed all exiting landcover to be an undeveloped wooded/grassed condition.

B. Site Topography

The majority of the site consists of moderate slopes ranging from about 3% to 50%. The south eastern portion of the site consists of slopes ranging between 3 to 15%. The northwestern portion of the parcel contains the steepest slopes located in close proximity to the exiting stream.

C. Surface Water Features

Surface water from the site drains to Dole Brook, which crosses the site between Riverside Industrial Parkway and the proposed development.

D. Soils

Soil characteristics were obtained from Web Soil Survey for Cumberland County. Additional soil data was gathered in the field via test pits conducted and observed by a licensed soil excavator and used to supplement the State-provided soil information. Soils identified on the site are identified below in Table 1.

Table 1 – Proximity Soil Types and Characteristics

Soil Type	Symbol	HSG
Suffield Silt Loam, 25 to 45% slopes, eroded	SuE2	C
Buxton Silt Loam, 3 to 8% slopes	BuB	C/D
Scantic silt loam	Sn	D

The hydrologic soil group (HSG) designation is based on a rating of the relative permeability of a soil, with Group "A" being extremely permeable such as coarse sand, to Group "D"

having low permeability such as clay. Supporting soils information can be found in Appendix F of this report.

E. Historic Flooding

There are no apparent flooding issues in the vicinity of this project. The site is not located within a flood hazard area as according to the Federal Emergency Management Agency (FEMA) Community Panel: 2300052-0020-D.

F. Methodology

The stormwater runoff analysis was developed using the "HydroCAD" computer modeling software, which incorporates the TR-55 and TR-20 methodologies as provided by the Soil Conservation Service of the U.S. Department of Agriculture. A minimum Time of Concentration of 6 minutes was used in the model for subcatchments with direct entry flow in order to comply with the above-mentioned methodologies.

The peak runoff rates were calculated using a 24-hour duration storm event with a Type III rainfall distribution. The rainfall amounts for Cumberland County for the 2, 10, and 25-year storm events are as follows:

Storm Frequency	24-hr Duration Rainfall (in.)
2-yr	3.1
10-yr	4.6
25-yr	5.8

III. Proposed Development

The applicant plans to construct an approximately 11,200 square-foot building, with an associated access drive, concrete pads, paved and gravel parking areas.

A. Alterations to Land Cover

As a result of the proposed improvements, the site will include a total impervious area of approximately 146,382 square feet (3.36 acres). This area includes the building footprint, paved parking and access drives, concrete pads and gravel parking areas. The proposed development area including proposed landscaping will encompass approximately 219,262 square feet (5.03 acres) of the site.

IV. Downstream Ponds and Waterbodies

Stormwater from the site is tributary to the Dole Brook, an Urban Impaired Stream identified by the Maine Department of Environmental Protection (MDEP). Dole Brook ultimately drains to the Atlantic Ocean.

V. Pre-Development Watershed Model

The predevelopment watershed plan was created using survey data, Cumberland County GIS data, recent aerial imagery, and on-site field observations. The pre-development watershed plan is broken into three subcatchments, which have been delineated based on topography and an

analysis point which remain consistent from pre-development to post-development conditions. Pre-development stormwater quantity calculations can be found in Appendix B of this report.

VI. Post-Development Watershed Model

The post-development watershed model utilizes the subcatchments from the pre-development model, but further breaks down subcatchments based on site improvements. The naming convention is a similar format as that from the pre-development model, with exception to for example, watershed 2 is now represented by watersheds numbered in the 20 series. Post-development stormwater quantity calculations can be found in Appendix C of this report.

VII. Regulatory Requirements

A. Basic Standards - Chapter 500, Section 4(B)
This project will disturb more than one acre of land, and therefore is subject to the Basic Standards outlined in Section 4B in Chapter 500, which requires that grading or other construction activities on the site do not impede or otherwise alter drainage ways to have an unreasonable adverse impact. We have avoided adverse impacts by providing an Erosion & Sedimentation Control Plan, and an Inspection, Maintenance and Housekeeping Plan (see Appendix C) to be implemented during construction and post-construction stabilization of the site. These construction requirements have been developed following Best Management Practice guidelines.

B. General Standards - Chapter 500, Section 4(C)
This project is also subject to the General Standards because this project includes more than one acre of impervious area and is not in the direct watershed of a lake.

C. Urban Impaired Stream Standard - Chapter 502, Section B
The project will be subject to the Urban Impaired Stream Standards because stormwater drainage from the project site is tributary to Dole Brook, an Urban Impaired Stream identified by the Maine Department of Environmental Protection (MDEP).

D. Flooding Standard - Chapter 500, Section 4(F)
The project will create more than three (3) acres of impervious surface, and therefore the MDEP Flooding Standard applies.

VIII. Stormwater Management Best Management Practices (BMPs)

The site design includes three grassed underdrained soil filter BMPs that will provide stormwater quality treatment and detention. The underdrained soil filters have been sized and designed according to the standards in Volume III of the Maine Stormwater Management Design Manual, Technical Design Manual, last revised May 2016. Construction details can be found on sheet 10 of plan set, and water quality calculations can be found in Appendix D of this report.

IX. Stormwater Quality Analysis

Calculations which demonstrate that the Stormwater BMP designs meet the treatment requirements of the General Standards can be found in appendix B. The stormwater drainage

design for the site provides water quality treatment for 95.68% (95% required) of new impervious area, and 81.22% (80% required) of the new total developed area, which includes new impervious and new landscaped area.

X. Stormwater Quantity Analysis

It is required to address stormwater in the two, ten, and twenty-five-year, twenty-four-hour storm events. The following table, Table 2, shows the pre-development and post-development peak flow discharges at the analysis (study point) of the site. This study point was chosen based on existing and proposed site features. The data in Table 2 was determined using HydroCAD software to model the existing and proposed conditions associated with the attached Watershed Plans in Appendix A. Full HydroCAD modeling reports can be found in Appendices B and C.

Storm Event	Peak Flow Rate		
	Pre (cfs)	Post (cfs)	Change (cfs)
2-Year	4.17	1.93	2.24
10-Year	9.21	8.04	1.17
25-Year	13.64	13.23	0.41

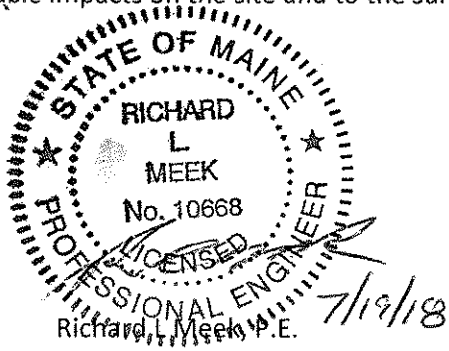
XI. Conclusions

The proposed development has been designed to manage stormwater runoff through Best Management Practices approved by MDEP. Stormwater BMP's provide treatment to 95.68% (95% required) of impervious areas, and 81.22% (80% required) of the total developed area. Runoff discharging from the site will be at or below pre-development conditions for the 2, 10, and 25-year storm events, as is required by the City of Portland. Additionally, erosion and sedimentation controls along with associated maintenance and housekeeping procedures have been outlined to prevent unreasonable impacts on the site and to the surrounding environment.

Prepared by:

SEBAGO TECHNICS, INC.

Sarah A. Hanf
Civil Engineer



Richard L. Meek, P.E.
Senior Project Engineer



GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 INCH = 40 FT.

PRE-DEVELOPMENT LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (B → C)
- REACH
- 1S — WATERSHED LABEL
- 1R — REACH
- SP1 — STUDY POINT
- 1P — STORMWATER TREATMENT/DETENTION POND
- SOILS BOUNDARY

PROGRESS PRINT

RICHARD L. MEEK PE.10668

STATE OF MAINE
RICHARD L. MEEK
No. 10668
REGISTERED PROFESSIONAL ENGINEER
07/13/18

DESIGNED	CHECKED
SAH	RLM

REV.	BY:	DATE:	STATUS:
A	SMF	7-13-18	ISSUED TO CITY

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

PRE-DEVELOPMENT WATERSHED PLAN

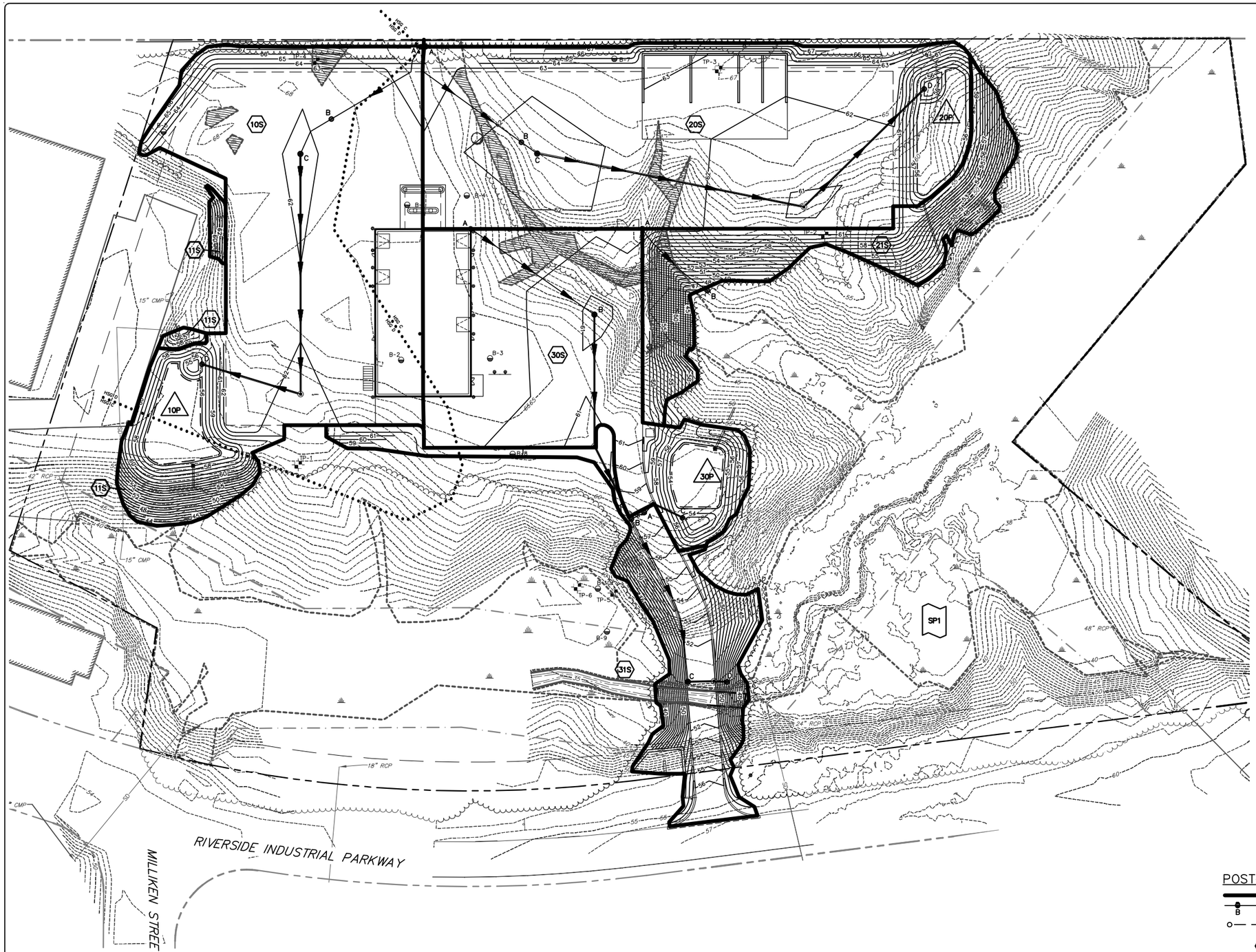
OF:
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE

FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 40'

SHEET 11 OF 12

16360 SWP.dwg, TAB:PRE



GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 INCH = 40 FT.

POST-DEVELOPMENT LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (B — C)
- REACH
- 10S — WATERSHED LABEL
- 10R — REACH
- SP1 — STUDY POINT
- 10P — STORMWATER TREATMENT/DETENTION POND
- SOILS BOUNDARY

PROGRESS PRINT

RICHARD L. MEEK PE.10668

STATE OF MAINE
RICHARD L. MEEK
No. 10668
REGISTERED PROFESSIONAL ENGINEER
07/13/18

DESIGNED	CHECKED
SAH	RLM

REV.	BY:	DATE:	STATUS:
A	SMF	7-13-18	ISSUED TO CITY

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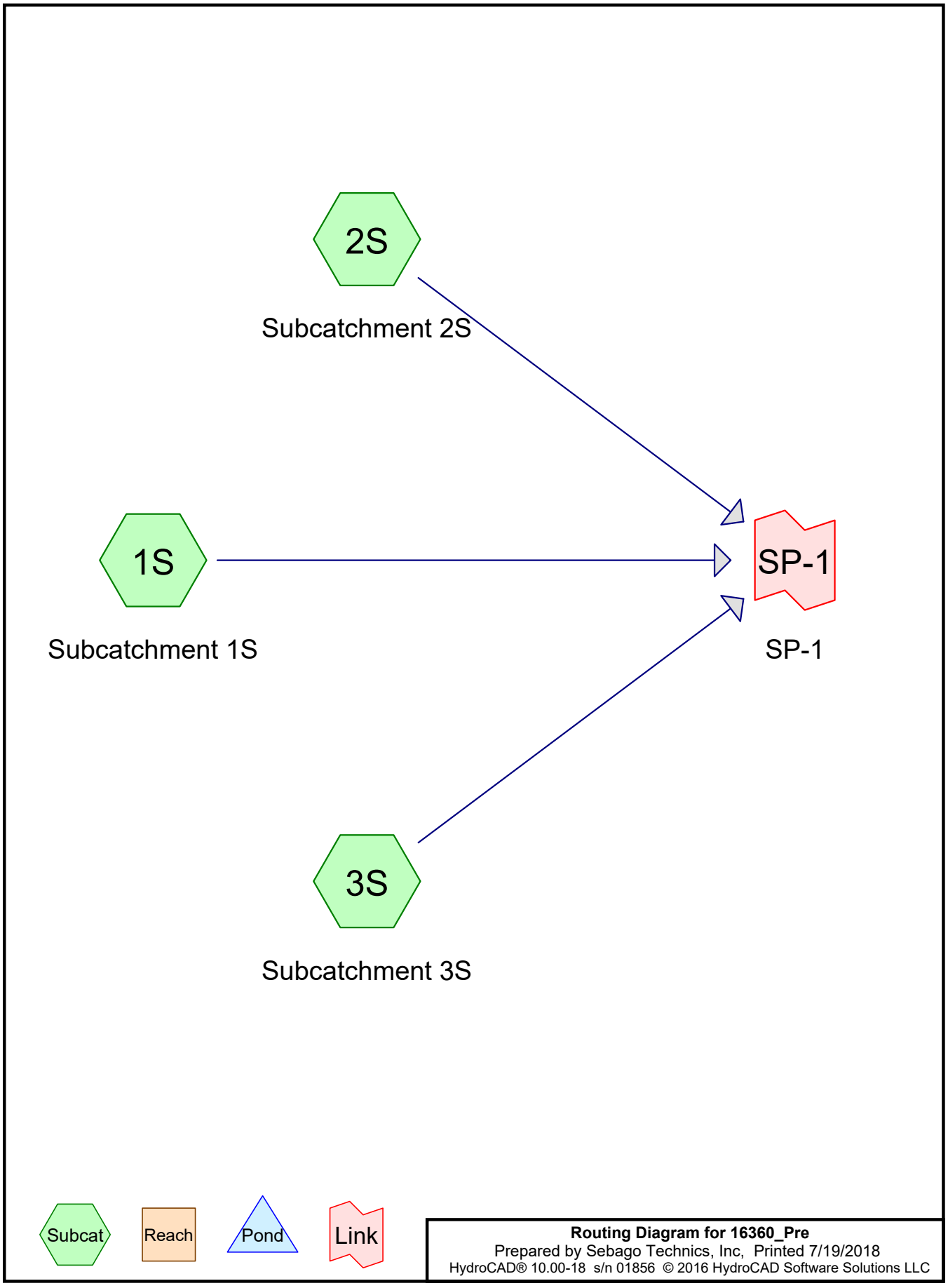
PROJECT NO.	SCALE
16360	1" = 40'

SHEET 12 OF 12

16360 SWP.dwg, TAB:POST



Routing Diagram for 16360_Pre
Prepared by Sebago Technics, Inc, Printed 7/19/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.018	98	Paved parking, HSG A (1S)
3.899	73	Woods, Fair, HSG C (1S, 2S, 3S)
1.281	79	Woods, Fair, HSG D (1S, 3S)

Summary for Subcatchment 1S: Subcatchment 1S

Runoff = 4.79 cfs @ 12.19 hrs, Volume= 0.439 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
37,150	79	Woods, Fair, HSG D
33,570	73	Woods, Fair, HSG C
792	98	Paved parking, HSG A
71,512	76	Weighted Average
70,720		98.89% Pervious Area
792		1.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0300	0.14		**Sheet Flow, A TO B** Grass: Dense n= 0.240 P2= 3.10"
1.7	190	0.0690	1.84		**Shallow Concentrated Flow, B TO C** Short Grass Pasture Kv= 7.0 fps
14.0	290	Total			

Summary for Subcatchment 2S: Subcatchment 2S

Runoff = 1.88 cfs @ 12.18 hrs, Volume= 0.169 af, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
30,132	73	Woods, Fair, HSG C
30,132		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0300	0.14		**Sheet Flow, A TO B** Grass: Dense n= 0.240 P2= 3.10"
0.8	132	0.1440	2.66		**Shallow Concentrated Flow, B TO C** Short Grass Pasture Kv= 7.0 fps
13.1	232	Total			

Summary for Subcatchment 3S: Subcatchment 3S

Runoff = 7.18 cfs @ 12.24 hrs, Volume= 0.720 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
106,157	73	Woods, Fair, HSG C
18,641	79	Woods, Fair, HSG D
124,798	74	Weighted Average
124,798		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0210	0.12		**Sheet Flow, A TO B** Grass: Dense n= 0.240 P2= 3.10"
0.6	67	0.0750	1.92		**Shallow Concentrated Flow, B TO C** Short Grass Pasture Kv= 7.0 fps
2.8	291	0.0600	1.71		**Shallow Concentrated Flow, C TO D** Short Grass Pasture Kv= 7.0 fps
17.6	458	Total			

Summary for Link SP-1: SP-1

Inflow Area = 5.198 ac, 0.35% Impervious, Inflow Depth = 3.07" for 25-YR event
Inflow = 13.64 cfs @ 12.22 hrs, Volume= 1.328 af
Primary = 13.64 cfs @ 12.22 hrs, Volume= 1.328 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=71,512 sf 1.11% Impervious Runoff Depth=1.08"
Flow Length=290' Tc=14.0 min CN=76 Runoff=1.55 cfs 0.148 af

Subcatchment2S: Subcatchment2S Runoff Area=30,132 sf 0.00% Impervious Runoff Depth=0.92"
Flow Length=232' Tc=13.1 min CN=73 Runoff=0.55 cfs 0.053 af

Subcatchment3S: Subcatchment3S Runoff Area=124,798 sf 0.00% Impervious Runoff Depth=0.97"
Flow Length=458' Tc=17.6 min CN=74 Runoff=2.17 cfs 0.232 af

Link SP-1: SP-1 Inflow=4.17 cfs 0.433 af
Primary=4.17 cfs 0.433 af

Total Runoff Area = 5.198 ac Runoff Volume = 0.433 af Average Runoff Depth = 1.00"
99.65% Pervious = 5.180 ac 0.35% Impervious = 0.018 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Subcatchment1S Runoff Area=71,512 sf 1.11% Impervious Runoff Depth=2.21"
Flow Length=290' Tc=14.0 min CN=76 Runoff=3.28 cfs 0.302 af

Subcatchment2S: Subcatchment2S Runoff Area=30,132 sf 0.00% Impervious Runoff Depth=1.97"
Flow Length=232' Tc=13.1 min CN=73 Runoff=1.25 cfs 0.114 af

Subcatchment3S: Subcatchment3S Runoff Area=124,798 sf 0.00% Impervious Runoff Depth=2.05"
Flow Length=458' Tc=17.6 min CN=74 Runoff=4.82 cfs 0.489 af

Link SP-1: SP-1 Inflow=9.21 cfs 0.905 af
Primary=9.21 cfs 0.905 af

Total Runoff Area = 5.198 ac Runoff Volume = 0.905 af Average Runoff Depth = 2.09"
99.65% Pervious = 5.180 ac 0.35% Impervious = 0.018 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

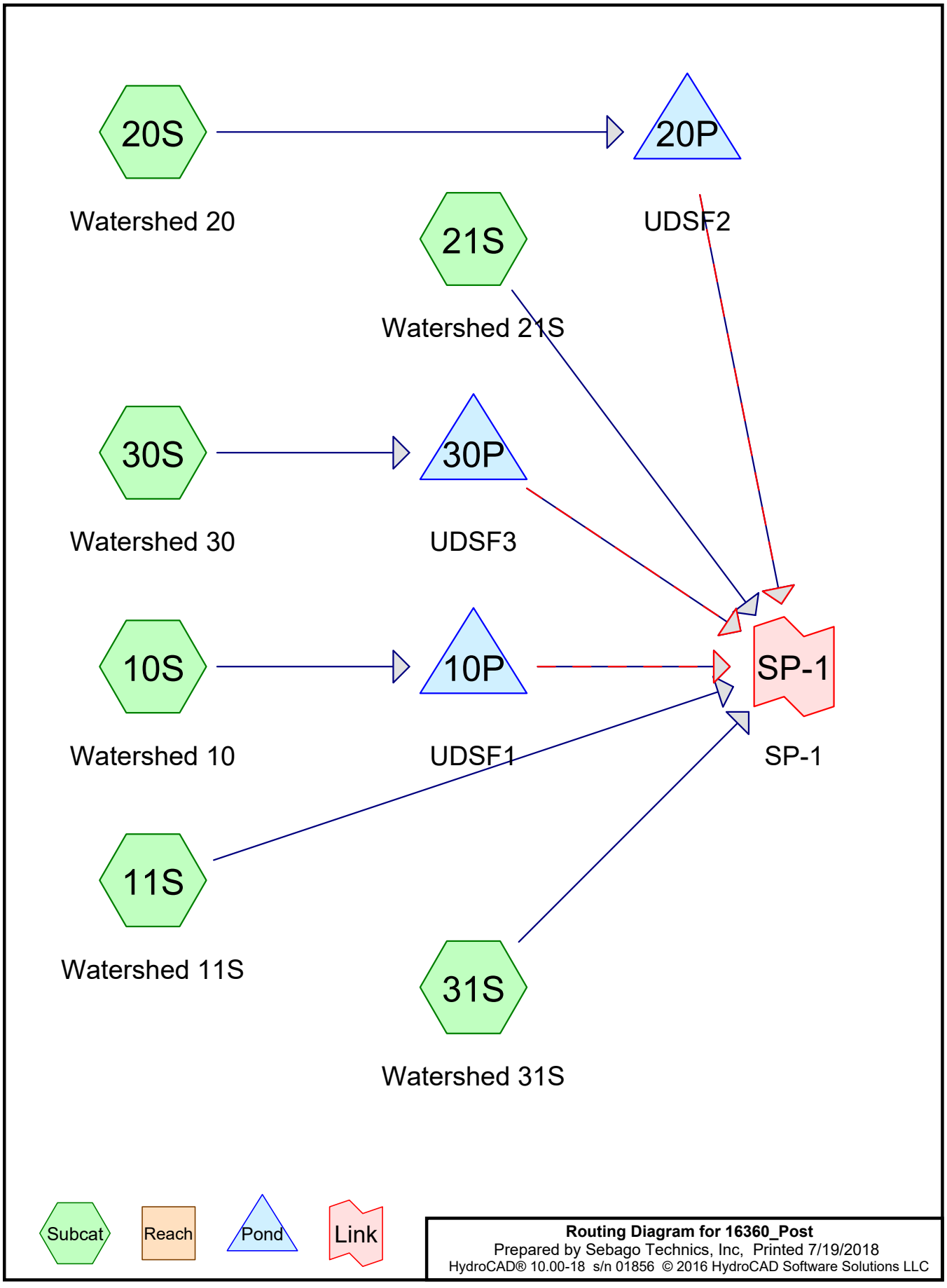
Subcatchment1S: Subcatchment1S Runoff Area=71,512 sf 1.11% Impervious Runoff Depth=3.21"
Flow Length=290' Tc=14.0 min CN=76 Runoff=4.79 cfs 0.439 af

Subcatchment2S: Subcatchment2S Runoff Area=30,132 sf 0.00% Impervious Runoff Depth=2.92"
Flow Length=232' Tc=13.1 min CN=73 Runoff=1.88 cfs 0.169 af

Subcatchment3S: Subcatchment3S Runoff Area=124,798 sf 0.00% Impervious Runoff Depth=3.02"
Flow Length=458' Tc=17.6 min CN=74 Runoff=7.18 cfs 0.720 af

Link SP-1: SP-1 Inflow=13.64 cfs 1.328 af
Primary=13.64 cfs 1.328 af

Total Runoff Area = 5.198 ac Runoff Volume = 1.328 af Average Runoff Depth = 3.07"
99.65% Pervious = 5.180 ac 0.35% Impervious = 0.018 ac



Routing Diagram for 16360_Post
Prepared by Sebago Technics, Inc, Printed 7/19/2018
HydroCAD® 10.00-18 s/n 01856 © 2016 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.507	74	>75% Grass cover, Good, HSG C (10S, 11S, 20S, 21S, 30S, 31S)
0.342	80	>75% Grass cover, Good, HSG D (10S, 31S)
3.371	98	Impervious (10S, 20S, 30S, 31S)
0.018	98	Paved parking, HSG B (11S)

Summary for Subcatchment 10S: Watershed 10

Runoff = 8.58 cfs @ 12.08 hrs, Volume= 0.656 af, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	51,893	98	Impervious
	3,774	74	>75% Grass cover, Good, HSG C
	13,066	80	>75% Grass cover, Good, HSG D
	68,733	93	Weighted Average
	16,840		24.50% Pervious Area
	51,893		75.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0120	1.10		**Sheet Flow, A TO B** Smooth surfaces n= 0.011 P2= 3.10"
0.3	41	0.0120	2.22		**Shallow Concentrated Flow, B TO C** Paved Kv= 20.3 fps
1.5	287	0.0050	3.21	2.52	**Pipe Channel, C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
2.7					**Direct Entry,**
6.0	428	Total			

Summary for Subcatchment 11S: Watershed 11S

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.037 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
792	98	Paved parking, HSG B
5,125	74	>75% Grass cover, Good, HSG C
5,917	77	Weighted Average
5,125		86.61% Pervious Area
792		13.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 20S: Watershed 20

Runoff = 8.69 cfs @ 12.08 hrs, Volume= 0.657 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	53,583	98	Impervious
	16,914	74	>75% Grass cover, Good, HSG C
	70,497	92	Weighted Average
	16,914		23.99% Pervious Area
	53,583		76.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	26	0.0270	0.14		**Sheet Flow, A to B** Grass: Short n= 0.150 P2= 3.10"
0.7	117	0.0175	2.69		**Shallow Concentrated Flow, B to C** Paved Kv= 20.3 fps
1.9	368	0.0050	3.21	2.52	**Pipe Channel, C to D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.4					**Direct Entry, Min Tc = 6.0 MIN**
6.0	511	Total			

Summary for Subcatchment 21S: Watershed 21S

Runoff = 1.57 cfs @ 12.09 hrs, Volume= 0.111 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
19,280	74	>75% Grass cover, Good, HSG C
19,280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	10	0.3300	0.32		**Sheet Flow, A TO B** Grass: Short n= 0.150 P2= 3.10"
0.2	55	0.3300	4.02		**Shallow Concentrated Flow, B TO C** Short Grass Pasture Kv= 7.0 fps
5.3					**Direct Entry,**
6.0	65	Total			

Summary for Subcatchment 30S: Watershed 30

Runoff = 5.34 cfs @ 12.08 hrs, Volume= 0.408 af, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	34,586	98	Impervious
	8,181	74	>75% Grass cover, Good, HSG C
	42,767	93	Weighted Average
	8,181		19.13% Pervious Area
	34,586		80.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	125	0.0168	1.32		**Sheet Flow, A to B** Smooth surfaces n= 0.011 P2= 3.10"
1.1	205	0.0050	3.21	2.52	**Pipe Channel, B to C** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
3.3					**Direct Entry, Min Tc = 6.0 Mins**
6.0	330	Total			

Summary for Subcatchment 31S: Watershed 31S

Runoff = 2.13 cfs @ 12.09 hrs, Volume= 0.153 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	6,779	98	Impervious
	12,371	74	>75% Grass cover, Good, HSG C
	1,845	80	>75% Grass cover, Good, HSG D
	20,995	82	Weighted Average
	14,216		67.71% Pervious Area
	6,779		32.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.89		**Sheet Flow, A TO B** Smooth surfaces n= 0.011 P2= 3.10"
0.6	146	0.0450	4.31		**Shallow Concentrated Flow, B TO C** Paved Kv= 20.3 fps
0.2	35	0.0050	3.21	2.52	**Pipe Channel, C TO D** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
5.0					**Direct Entry,**
6.0	193	Total			

Summary for Pond 10P: UDSF1

Inflow Area = 1.578 ac, 75.50% Impervious, Inflow Depth = 4.99" for 25-YR event
Inflow = 8.58 cfs @ 12.08 hrs, Volume= 0.656 af
Outflow = 1.78 cfs @ 12.50 hrs, Volume= 0.636 af, Atten= 79%, Lag= 25.1 min
Primary = 1.78 cfs @ 12.50 hrs, Volume= 0.636 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 58.79' @ 12.50 hrs Surf.Area= 6,342 sf Storage= 15,509 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 461.5 min (1,235.5 - 774.0)

Volume	Invert	Avail.Storage	Storage Description
#1	55.50'	20,256 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
55.50	3,079	0	0
56.00	3,476	1,639	1,639
57.00	4,639	4,058	5,696
58.00	5,565	5,102	10,798
59.00	6,547	6,056	16,854
59.50	7,060	3,402	20,256

Device	Routing	Invert	Outlet Devices
#1	Primary	53.07'	**12.0" Round Culvert** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 53.07' / 52.97' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	58.75'	**1.0" x 9.0" Horiz. Beehive Grate X 28.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	53.17'	**1.2" Vert. Orifice/Grate** C= 0.600
#4	Device 1	57.00'	**3.5" Vert. Orifice/Grate** C= 0.600
#5	Secondary	58.80'	**8.0' long x 9.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50

Coef. (English) 2.46 2.55 2.70 2.69 2.68 2.68 2.67 2.64 2.64
2.64 2.65 2.64 2.65 2.65 2.66 2.67 2.69

Primary OutFlow Max=1.78 cfs @ 12.50 hrs HW=58.79' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 1.78 cfs of 7.62 cfs potential flow)
  - **2=Beehive Grate** (Weir Controls 1.28 cfs @ 0.66 fps)
  - **3=Orifice/Grate** (Orifice Controls 0.09 cfs @ 11.37 fps)
  - **4=Orifice/Grate** (Orifice Controls 0.41 cfs @ 6.18 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=55.50' TW=0.00' (Dynamic Tailwater)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 20P: UDSF2

Inflow Area = 1.618 ac, 76.01% Impervious, Inflow Depth = 4.87" for 25-YR event
Inflow = 8.69 cfs @ 12.08 hrs, Volume= 0.657 af
Outflow = 5.79 cfs @ 12.17 hrs, Volume= 0.657 af, Atten= 33%, Lag= 5.2 min
Primary = 5.76 cfs @ 12.17 hrs, Volume= 0.657 af
Secondary = 0.02 cfs @ 12.17 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 58.26' @ 12.17 hrs Surf.Area= 4,792 sf Storage= 8,959 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 269.8 min (1,047.9 - 778.2)

Volume	Invert	Avail.Storage	Storage Description
#1	56.00'	12,595 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
56.00	3,050	0	0
57.00	3,850	3,450	3,450
58.00	4,720	4,285	7,735
59.00	5,000	4,860	12,595

Device	Routing	Invert	Outlet Devices
#1	Primary	53.57'	**12.0" Round 12" SD** L= 20.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 53.57' / 53.30' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	53.67'	**1.2" Vert. Orifice/Grate** C= 0.600
#3	Device 1	57.40'	**1.0" W x 9.0" H Vert. Beehive X 28.00** C= 0.600
#4	Secondary	58.25'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=5.76 cfs @ 12.17 hrs HW=58.26' TW=0.00' (Dynamic Tailwater)
└**1=12" SD** (Passes 5.76 cfs of 6.83 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 10.26 fps)
  └**3=Beehive** (Orifice Controls 5.68 cfs @ 3.25 fps)

Secondary OutFlow Max=0.02 cfs @ 12.17 hrs HW=58.26' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.21 fps)

Summary for Pond 30P: UDSF3

Inflow Area = 0.982 ac, 80.87% Impervious, Inflow Depth = 4.99" for 25-YR event
Inflow = 5.34 cfs @ 12.08 hrs, Volume= 0.408 af
Outflow = 3.67 cfs @ 12.17 hrs, Volume= 0.408 af, Atten= 31%, Lag= 4.9 min
Primary = 3.67 cfs @ 12.17 hrs, Volume= 0.408 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 55.62' @ 12.17 hrs Surf.Area= 3,718 sf Storage= 5,930 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 325.6 min (1,099.6 - 774.0)

Volume	Invert	Avail.Storage	Storage Description
#1	53.50'	11,788 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
53.50	2,003	0	0
54.00	2,269	1,068	1,068
55.00	3,197	2,733	3,801
56.00	4,043	3,620	7,421
57.00	4,690	4,367	11,788

Device	Routing	Invert	Outlet Devices
#1	Primary	51.07'	**12.0" Round 12" SD** L= 35.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 51.07' / 50.50' S= 0.0163 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	51.17'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	55.00'	**1.0" W x 9.0" H Vert. Beehive Grate X 28.00** C= 0.600
#4	Secondary	55.65'	**10.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=3.67 cfs @ 12.17 hrs HW=55.62' TW=0.00' (Dynamic Tailwater)
└─**1=12" SD** (Passes 3.67 cfs of 6.71 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.06 cfs @ 10.10 fps)
  └─**3=Beehive Grate** (Orifice Controls 3.62 cfs @ 2.52 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=53.50' TW=0.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Link SP-1: SP-1

Inflow Area = 5.238 ac, 64.70% Impervious, Inflow Depth > 4.59" for 25-YR event
Inflow = 13.23 cfs @ 12.13 hrs, Volume= 2.002 af
Primary = 13.23 cfs @ 12.13 hrs, Volume= 2.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10S: Watershed 10 Runoff Area=68,733 sf 75.50% Impervious Runoff Depth=2.35"
Flow Length=428' Tc=6.0 min CN=93 Runoff=4.22 cfs 0.309 af

Subcatchment11S: Watershed 11S Runoff Area=5,917 sf 13.39% Impervious Runoff Depth=1.14"
Tc=6.0 min CN=77 Runoff=0.18 cfs 0.013 af

Subcatchment20S: Watershed 20 Runoff Area=70,497 sf 76.01% Impervious Runoff Depth=2.26"
Flow Length=511' Tc=6.0 min CN=92 Runoff=4.19 cfs 0.304 af

Subcatchment21S: Watershed 21S Runoff Area=19,280 sf 0.00% Impervious Runoff Depth=0.97"
Flow Length=65' Slope=0.3300 '/' Tc=6.0 min CN=74 Runoff=0.47 cfs 0.036 af

Subcatchment30S: Watershed 30 Runoff Area=42,767 sf 80.87% Impervious Runoff Depth=2.35"
Flow Length=330' Tc=6.0 min CN=93 Runoff=2.62 cfs 0.192 af

Subcatchment31S: Watershed 31S Runoff Area=20,995 sf 32.29% Impervious Runoff Depth=1.46"
Flow Length=193' Tc=6.0 min CN=82 Runoff=0.82 cfs 0.059 af

Pond 10P: UDSF1 Peak Elev=57.41' Storage=7,688 cf Inflow=4.22 cfs 0.309 af
Primary=0.24 cfs 0.307 af Secondary=0.00 cfs 0.000 af Outflow=0.24 cfs 0.307 af

Pond 20P: UDSF2 Peak Elev=57.65' Storage=6,123 cf Inflow=4.19 cfs 0.304 af
Primary=0.99 cfs 0.304 af Secondary=0.00 cfs 0.000 af Outflow=0.99 cfs 0.304 af

Pond 30P: UDSF3 Peak Elev=55.13' Storage=4,213 cf Inflow=2.62 cfs 0.192 af
Primary=0.39 cfs 0.192 af Secondary=0.00 cfs 0.000 af Outflow=0.39 cfs 0.192 af

Link SP-1: SP-1 Inflow=1.93 cfs 0.911 af
Primary=1.93 cfs 0.911 af

Total Runoff Area = 5.238 ac Runoff Volume = 0.913 af Average Runoff Depth = 2.09"
35.30% Pervious = 1.849 ac 64.70% Impervious = 3.389 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10S: Watershed 10 Runoff Area=68,733 sf 75.50% Impervious Runoff Depth=3.81"
Flow Length=428' Tc=6.0 min CN=93 Runoff=6.65 cfs 0.500 af

Subcatchment11S: Watershed 11S Runoff Area=5,917 sf 13.39% Impervious Runoff Depth=2.29"
Tc=6.0 min CN=77 Runoff=0.36 cfs 0.026 af

Subcatchment20S: Watershed 20 Runoff Area=70,497 sf 76.01% Impervious Runoff Depth=3.70"
Flow Length=511' Tc=6.0 min CN=92 Runoff=6.70 cfs 0.499 af

Subcatchment21S: Watershed 21S Runoff Area=19,280 sf 0.00% Impervious Runoff Depth=2.05"
Flow Length=65' Slope=0.3300 '/' Tc=6.0 min CN=74 Runoff=1.05 cfs 0.076 af

Subcatchment30S: Watershed 30 Runoff Area=42,767 sf 80.87% Impervious Runoff Depth=3.81"
Flow Length=330' Tc=6.0 min CN=93 Runoff=4.14 cfs 0.311 af

Subcatchment31S: Watershed 31S Runoff Area=20,995 sf 32.29% Impervious Runoff Depth=2.72"
Flow Length=193' Tc=6.0 min CN=82 Runoff=1.54 cfs 0.109 af

Pond 10P: UDSF1 Peak Elev=58.30' Storage=12,525 cf Inflow=6.65 cfs 0.500 af
Primary=0.43 cfs 0.489 af Secondary=0.00 cfs 0.000 af Outflow=0.43 cfs 0.489 af

Pond 20P: UDSF2 Peak Elev=58.02' Storage=7,835 cf Inflow=6.70 cfs 0.499 af
Primary=3.75 cfs 0.499 af Secondary=0.00 cfs 0.000 af Outflow=3.75 cfs 0.499 af

Pond 30P: UDSF3 Peak Elev=55.42' Storage=5,223 cf Inflow=4.14 cfs 0.311 af
Primary=2.10 cfs 0.311 af Secondary=0.00 cfs 0.000 af Outflow=2.10 cfs 0.311 af

Link SP-1: SP-1 Inflow=8.04 cfs 1.510 af
Primary=8.04 cfs 1.510 af

Total Runoff Area = 5.238 ac Runoff Volume = 1.522 af Average Runoff Depth = 3.49"
35.30% Pervious = 1.849 ac 64.70% Impervious = 3.389 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10S: Watershed 10 Runoff Area=68,733 sf 75.50% Impervious Runoff Depth=4.99"
Flow Length=428' Tc=6.0 min CN=93 Runoff=8.58 cfs 0.656 af

Subcatchment11S: Watershed 11S Runoff Area=5,917 sf 13.39% Impervious Runoff Depth=3.31"
Tc=6.0 min CN=77 Runoff=0.53 cfs 0.037 af

Subcatchment20S: Watershed 20 Runoff Area=70,497 sf 76.01% Impervious Runoff Depth=4.87"
Flow Length=511' Tc=6.0 min CN=92 Runoff=8.69 cfs 0.657 af

Subcatchment21S: Watershed 21S Runoff Area=19,280 sf 0.00% Impervious Runoff Depth=3.02"
Flow Length=65' Slope=0.3300 '/' Tc=6.0 min CN=74 Runoff=1.57 cfs 0.111 af

Subcatchment30S: Watershed 30 Runoff Area=42,767 sf 80.87% Impervious Runoff Depth=4.99"
Flow Length=330' Tc=6.0 min CN=93 Runoff=5.34 cfs 0.408 af

Subcatchment31S: Watershed 31S Runoff Area=20,995 sf 32.29% Impervious Runoff Depth=3.80"
Flow Length=193' Tc=6.0 min CN=82 Runoff=2.13 cfs 0.153 af

Pond 10P: UDSF1 Peak Elev=58.79' Storage=15,509 cf Inflow=8.58 cfs 0.656 af
Primary=1.78 cfs 0.636 af Secondary=0.00 cfs 0.000 af Outflow=1.78 cfs 0.636 af

Pond 20P: UDSF2 Peak Elev=58.26' Storage=8,959 cf Inflow=8.69 cfs 0.657 af
Primary=5.76 cfs 0.657 af Secondary=0.02 cfs 0.000 af Outflow=5.79 cfs 0.657 af

Pond 30P: UDSF3 Peak Elev=55.62' Storage=5,930 cf Inflow=5.34 cfs 0.408 af
Primary=3.67 cfs 0.408 af Secondary=0.00 cfs 0.000 af Outflow=3.67 cfs 0.408 af

Link SP-1: SP-1 Inflow=13.23 cfs 2.002 af
Primary=13.23 cfs 2.002 af

Total Runoff Area = 5.238 ac Runoff Volume = 2.022 af Average Runoff Depth = 4.63"
35.30% Pervious = 1.849 ac 64.70% Impervious = 3.389 ac

Table 1: MDEP GENERAL STANDARD CALCULATIONS

Job # 16360 Riverside Street Lot

AREA ID	WATERSHED SIZE (S.F.)	EXISTING ONSITE IMPERVIOUS AREA TO REMAIN (S.F.)	NEW ONSITE IMPERVIOUS AREA (S.F.)	EXISTING ONSITE LANDSCAPED AREA TO REMAIN (S.F.)	NEW ONSITE LANDSCAPED AREA (S.F.)	NET NEW DEVELOPED AREA (S.F.)	NET EXISTING DEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED (S.F.)	LANDSCAPED AREA TREATED* (S.F.)	TOTAL AREA TREATED (S.F.)	TREATMENT BMP
10	64,830	459	51,434	1,556	11,381	62,815	0	YES	51,893	12,937	64,830	UDSF1
11	5,917	792	0	0	5,125	5,125	0	NO	0	0	0	
20	68,292	0	53,583	2,205	14,709	68,292	0	YES	53,583	16,914	70,497	UDSF2
21	19,268	0	0	0	19,268	19,268	0	NO	0	0	0	
30	42,767	0	34,586	0	8,181	42,767	0	YES	34,586	8,181	42,767	UDSF3
31	20,995	0	6,779	0	14,216	20,995	0	NO	0	0	0	
TOTAL (S.F.)	**222,069**	**1,251**	**146,382**	**3,761**	**72,880**	**219,262**	**0**		**140,062**	**38,032**	**178,094**	

TOTAL NEW IMPERVIOUS AREA (S.F.)	**146,382**	**TOTAL DEVELOPED AREA (S.F.)**	**219,262**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (S.F.)	**140,062**	**TOTAL LANDSCAPED AREA RECEIVING TREATMENT (S.F.)**	**178,094**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**95.68%**	**% OF DEV. AREA RECEIVING TREATMENT**	**81.22%**

SEBAGO TECHNICS, INC.
75 John Roberts Road Suite 4A
South Portland, Maine 04106
Tel. (207) 200-2100

JOB
SHEET NO. 1 OF 1
CALCULATED BY DATE 3/2/2017
FILE NAME PRNT DATE 7/19/2018

UNDERDRAINED SOIL FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

1. Maine DEP Chapter 500, Section 4.C.(3)(b)

References

a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"

2. Maine DEP Best Management Practices Stormwater Manual, Section 7.1

a. "surface should represent 5% of impervious area and 2% of landscaped area"

Tributary to Underdrained Filter: UDSF1

Landscaped Area	12,937.00	SF				
Impervious Area	53,143.00	SF				

Minimum Surface Area

Required (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	12,937.00	SF	Area	258.7	SF	
Total Impervious Area	53,143.00	SF	Area	2,657.2	SF	
Required Minimum Surface Area				2,915.9	SF	
Provided Surface Area				3,079.0	SF	

Treatment Volume

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	12,937.00	SF	Volume	431.2				
Impervious Area	53,143.00	SF	Volume	4,428.6				
Treatment Volume Required				4,859.8	CF	0.112	AF	
Provided Treatment Volume				5,696.0	CF	Elev 55.5 to Elev 57.0		

Sediment Pre-Treatment

Per Reference 2, Chapter 7.1 "Pretreatment devices shall be provided to minimize discharge of sediment to the soil filter"

Annual Sediment Load: 55 cubic feet per acre per year of sanded area

Area to be sanded:	53,143.00	SF						
Sediment Volume	67	CF						
Provided	100	CF	15	Inch Deep Forebay	with area of		80	sf

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SHEET NO. 1 OF 1
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FILE NAME PRNT DATE 7/19/2018

UNDERDRAINED SOIL FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

1. Maine DEP Chapter 500, Section 4.C.(3)(b)

References

a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"

2. Maine DEP Best Management Practices Stormwater Manual, Section 7.1

a. "surface should represent 5% of impervious area and 2% of landscaped area"

Tributary to Underdrained Filter: UDSF2

Landscaped Area	16,914.00	SF				
Impervious Area	53,583.00	SF				

Minimum Surface Area

Required (2% X Landscaped + 5% X Impervious)

Total Landscaped Area	16,914.00	SF	Area	338.3	SF	
Total Impervious Area	53,583.00	SF	Area	2,679.2	SF	
Required Minimum Surface Area				3,017.4	SF	
Provided Surface Area				3,050.0	SF	

Treatment Volume

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	16,914.00	SF	Volume	563.8				
Impervious Area	53,583.00	SF	Volume	4,465.3				
Treatment Volume Required				5,029.1	CF	0.115	AF	
Provided Treatment Volume				5,060.0	CF	Elev 56.00 to Elev 57.40		

Sediment Pre-Treatment

Per Reference 2, Chapter 7.1 "Pretreatment devices shall be provided to minimize discharge of sediment to the soil filter"

Annual Sediment Load: 55 cubic feet per acre per year of sanded area

Area to be sanded:	53,583.00	SF						
Sediment Volume	68	CF						
Provided	180	CF	15	Inch Deep Forebay	with area of		144	sf

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JOB
SHEET NO. 1 OF 1
CALCULATED BY DATE 3/2/2017
FILE NAME PRNT DATE 7/19/2018

UNDERDRAINED SOIL FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

1. Maine DEP Chapter 500, Section 4.C.(3)(b)

References

a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"

2. Maine DEP Best Management Practices Stormwater Manual, Section 7.1

a. "surface should represent 5% of impervious area and 2% of landscaped area"

Tributary to Underdrained Filter: UDSF3

Landscaped Area	8,181.00	SF				
Impervious Area	34,586.00	SF				

Minimum Surface Area

Required (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	8,181.00	SF	Area	163.6	SF	
Total Impervious Area	34,586.00	SF	Area	1,729.3	SF	
Required Minimum Surface Area				1,892.9	SF	
Provided Surface Area				2,003.0	SF	

Treatment Volume

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	8,181.00	SF	Volume	272.7				
Impervious Area	34,586.00	SF	Volume	2,882.2				
Treatment Volume Required				3,154.9	CF	0.072	AF	
Provided Treatment Volume				3,801.0	CF	Elev 53.50 to Elev 55.0		

Sediment Pre-Treatment

Per Reference 2, Chapter 7.1 "Pretreatment devices shall be provided to minimize discharge of sediment to the soil filter"

Annual Sediment Load: 55 cubic feet per acre per year of sanded area

Area to be sanded: 34,586.00 SF

Sediment Volume 44 CF

Provided 63 CF 15 Inch Deep Forebay with area of 50 sf

16360

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN
250 Riverside Industrial Parkway
Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance, and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site by the contractor during construction and the owner and/or the City of Portland after construction. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section and the erosion and sedimentation control plan for the project. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once per week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. Correction action shall be performed in general conformance with the Maine Construction General Permit and Maine DEP Chapter 500 Stormwater standards. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made

accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Filter Berms:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

C. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

D. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

E. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.

- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

F. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

G. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation. A Spill, Prevention, Control and Countermeasures Plan is created for the project and is to be kept onsite at all times.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench or foundation dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Post-Construction

1. **Inspection:** After construction, it is the responsibility of Patco Construction or assigned heirs to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction.

   A. Vegetated Areas:
   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
   - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. Ditches, Swales and Other Open Channels:

   - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
   - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
   - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
   - If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

   C. Winter Sanding:

- Clear accumulations of winter sand along access road at least once a year, preferably in the spring.
- Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

D. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

E. Underdrained Soil Filter:

- During the first year, the basin shall be inspected semi-annually and following major storm events.
- Debris and sediment buildup shall be removed from the forebay and basin as needed. Mowing of a grassed basin can occur semiannually to a height no less than 6 inches. Any bare area or erosion rills shall be repaired with new filter media or sandy loam then seeded and mulched. Maintaining good grass cover will minimize clogging with fine sediments and if ponding exceeds 48 hours, the top of the filter bed must be rototilled to reestablish the soil's filtration capacity.
- The soil filter should be inspected after every major storm in the first year to be sure it is functioning properly. Thereafter, the filter should be inspected at least once every six months to ensure that it is draining within 48 hours following a one-inch storm or greater. Following storms that fill the system and overflow is observed, the soil filter should drain in no less than 36 to 60 hours. If the system drains too fast, an orifice may need to be added on the underdrain outlet or, if already present, may need to be modified.
- Soil Filter Replacement: The top several inches of the filter shall be replaced with fresh material when water ponds on the surface of the bed for more than 72 hours. Removed sediments should be disposed of in an acceptable manner.
- Sediment Removal: Sediment and plant debris should be removed from the pretreatment structure at least annually.
- Mowing: If mowing is desired, only handheld string trimmers or push-mowers are allowed on the filter (no tractor) and the grass bed should be mowed no more than 2 times per growing season to maintain grass heights of no less than 6 inches.
- Fertilization: Fertilization of the underdrained filter area should be avoided unless absolutely necessary to establish vegetation.
- Harvesting and Weeding: Harvesting and pruning of excessive growth will need to be done occasionally. Weeding to control unwanted or invasive plants may also be necessary.

3. Documentation:

A. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

4. Maine DEP Recertification: A certification of the following shall be submitted to the MDEP within three months of the expiration of each five-year interval from the date of issuance of MDEP permits.

A. Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

B. Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

C. The Inspection, Maintenance, and Housekeeping Plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the MDEP, and the maintenance log is being maintained.

5. Duration of Maintenance: Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments

Attachment 1 – Stormwater Inspection and Maintenance Log Form

16360

ATTACHMENT 1 – STORMWATER INSPECTION AND MAINTENANCE LOG

250 Riverside Industrial Parkway
Portland, Maine

This log is intended to accompany the Inspection, Maintenance, and Housekeeping Plan for the proposed Facility in Portland, Maine. The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the municipality. Qualified personnel familiar with drainage systems and soils shall perform all inspections. Attached is a copy of the construction and post-construction maintenance logs.

`	INSPECTOR NAME	DATE PERFORMED	SUGGESTED INTERVAL
Vegetated Areas			
Inspect all slopes and embankments			Annually
Replant bare areas or areas with sparse growth			Annually
Paved Surfaces			
Clear accumulated winter sand			Annually
Remove sediment along edges and in pockets			Annually
Ditches & Swales			
Remove any obstructions and accumulated sediments and debris			Monthly
Repair any erosion of ditch lining			Annually
Mow vegetated ditches			Annually
Remove woody vegetation growing through riprap			Annually
Repair any slumping side slopes			Annually
Replace riprap where stones have dislodged			Annually
Catch Basins			
Remove accumulated sediments and debris in the sump and at grate			Annually
Culverts			
Remove accumulated sediments and debris at the inlet, outlet, within conduit			Annually
Repair any erosion at inlet and outlet			Annually
Sump Depth			Annually

	Remove trash and other debris			Annually
	Replace mulch layer and tree pruning			Annually
Underdrained Soil Filter				
	Remove sediment & debris			Monthly
	Remove weeds			Monthly (during growing season)
	Erosion (side slopes, embankment)			Monthly
	Inspection after major storm to verify proper function			Bi-Annually


70° 18' 39" W
70° 18' 23" W
394420
394470
394520
394570
394620
394670
394720
43° 42' 35" N
43° 42' 20" N
4840470
4840420
4840370
4840320
4840270
4840220
4840170
4840120
4840070
4840020
95
BuB
SuE2
Sn
Riverside Industrial Pkwy
Soil Map may not be valid at this scale.
Map Scale: 1:2,290 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0 30 60 120 180
Feet
0 100 200 400 600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 13, Sep 11, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BuB	Lamoine silt loam, 3 to 8 percent slopes	C/D	1.3	8.4%
Sn	Scantic silt loam, 0 to 3 percent slopes	D	2.1	14.3%
SuE2	Suffield silt loam, 25 to 45 percent slopes, eroded	C	11.5	77.3%
Totals for Area of Interest			**14.9**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

24: Public Infrastructure and Safety

Consistency with City Master Plans (14-526 (c) 1)

- Identify consistency with master plans

    a. The proposed development is consistent with the City Master Plan. The proposed development is zoned for the proposed use and is consistent with the neighboring properties. The proposed site development does not include features that will burden the City's resources.

- Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable

    b. Existing easements as shown on the site plans will be maintained in order to continue off-premises public infrastructure.

25: Public Infrastructure and Safety

Public Safety and Fire Prevention (14-526 (c))

- Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3)

  3.1.1 Natural Surveillance: The area adjacent to the building affords on – site visibility. Building entrances and the parking area will be illuminated by proposed wall pack light fixtures.

  3.1.2 Access Management: The site plan is designed to allow access to the building at all times, while access to the gravel yard will be restricted by fencing and gates, which will be closed at the end of each business day.

  3.1.3 Territorial Reinforcement: While the entire site is private, members of the public are not restricted from accessing the site, except for the gravel yard during non – business hours.

- Emergency vehicle access

  2.b. There is adequate access to the site for emergency vehicles. Please see the plan set.

- Address consistency with public safety standards (Technical Manual, Section 3)

  The proposed development will comply with the applicable NFPA regulations. In addition, the site plan complies with the applicable sections of the Technical Design Manual in the following manner:

  3. Public Safety Standards

  3.2 Fire Hydrant Standard - There are two hydrants located northerly of the proposed access drive > 300 linear feet from the proposed entry drive off Riverside Industrial Parkway right of way. Review of the PWD infrastructure map does not provide clear status of the aforementioned nearby hydrants.

  3.4 Site Access Standards

  3.4.1 There are no dead end roads associated with the proposed site development. No lot connectivity is proposed as part of the site development.

  3.4.2 The access drive is ±340 LF and fire and rescue equipment can access at least two sides of the building.

  3.4.3 The building setbacks meet the zoning requirements and allow adequate access for emergency vehicles.

3.4.4 The main entry is located within fifty feet of the site access drive/work yard.

3.4.5 Site access provides the minimum 9-foot clearance height to accommodate ambulance access.

3.4.6 There are no elevators proposed.

3.4.7 The assigned street number will be visible from the project signage on Riverside Industrial Parkway and will be visible on the building façade as required by the City of Portland.

3.5 Standards for Emergency Access Lanes and Gates
Not applicable. Dedicated access lanes are not proposed. The circulation pattern on the site will accommodate fire and rescue vehicle turning radii, as required.

3.5.8. The clear opening provided through any drive-able gates shall be two (2') feet wider than the traveled way.

3.5.11. The applicant understands that use of automatic gates such as the "Click2enter" systems requires prior approval from the Reviewing Authority.

3.6 Subdivision Standards
The subdivision requirements do not apply to this project.

3.7 Standards for Blasting and Regulation of Explosives
No blasting is anticipated.

- Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3)-Fire Checklist

  Please see the attached Fire Department Checklist.

PORTLAND FIRE DEPARTMENT
SITE REVIEW
FIRE DEPARTMENT CHECKLIST

A separate drawing[s] shall be provided as part of the site plan application for the Portland Fire Department's review.

1. Name, address, telephone number of applicant Two Eisenhower Drive LLC, PO Box 1120, Portland, ME 04104
2. c/o David Machesney, (207) 854-5056
3. Name address, telephone number of ~~architect~~ designer: PATCO, 1293 Main St., Sanford, ME 04073
   (207) 324-5574, c/o Greg Patterson
4. Proposed uses of any structures [NFPA and IBC classification]
5.
6. Square footage of all structures [total and per story]
   11,200 SF footprint (1st Fl.), +/- 3,520 SF (2nd Fl.) = 14,720 SF GROSS
7. Elevation of all structures Building height 24'
8. Proposed fire protection of all structures
   - ***As of September 16, 2010 all new construction of one and two family homes are required to be sprinkled in compliance with NFPA 13D. This is required by City Code. (NFPA 101 2009 ed.)***
9. Hydrant locations +/- 650' south of the proposed entry drive location on Riverside Industrial Parkway
10. Water main[s] size and location 16" DI at Riverside Industrial Parkway, 2" Domestic, 6" Fire Protection Proposed
11. Access to all structures [min. 2 sides] Yes. See Site Plan.
12. A code summary shall be included referencing NFPA 1 and all fire department. Technical standards. See narrative, this section -16.

Some structures may require Fire flows using annex H of NFPA 1

26: Public Infrastructure and Safety

Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9)

- Electrical services, including providing underground services
- Identify existing and proposed connections for public utilities and required public utility upgrades
- Sewer line connections are required, if there is a main within 200 feet
- Proposed solid waste management facilities on-site and management for the site
- Written evidence of the ability to serve from utility companies, as applicable

a. The development will not overburden sanitary sewers, storm drains, water lines, or other public infrastructure and utilities. Adequate utility capacity confirmation has been solicited from respective utility companies. Please see attached letters of inquiry and responses.

b. Electrical service extends underground within the entry drive. See Utilities Plan.

c. All proposed sanitary sewers, storm drains, water lines or other utilities services meet the requirements of Sections 2 and 9 of the City Technical manual.

d. The proposed development will connect to the existing sewer main located within the sewer easement on the property. See Plan Set for locations and design specifics.

e. The proposed sanitary sewer and stormwater utilities are designed to City standards in Sections 2 and 4, Chapter 500 Stormwater Management Standards of the Technical Manual.

f. The proposed tenant will provide solid waste disposal for the proposed new facility per a lease agreement. Solid wastes will be recycled to greatest extent practicable. Exterior solid waste storage area is not included as part of this site plan application.

Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

August 7, 2018

Sarah Hanf
Sebago Technics
75 John Roberts Road Suite 4A
South Portland, ME 04106

Re: 250 Riverside Industrial Parkway, PO
Ability to Serve with PWD Water

Dear Ms. Hanf:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on July 16, 2018. Based on the information provided per plans dated July 2018 titled Utility Plan, we can confirm that the District will be able to serve the proposed project as further described in this letter. **Please note that this letter constitutes approval of the water system as currently designed. Any changes affecting the approved water system will require further review and approval by PWD.**

Conditions of Service

The following conditions of service apply:

- A new 6-inch fire service and 2-inch domestic service may be installed from the water main in Riverside Industrial Parkway. The service should enter through the properties frontage on Riverside Industrial Parkway at least 10-feet from any side property lines. Please note that only one meter and one bill will be associated to each domestic service line. This one master meter would be located in a common space that all tenants could gain access to if necessary.
- Since the length of this service line will exceed 300-feet, a meter pit will be required. The meter pit should be located on private property within 10-20 feet of the property line at Riverside Industrial Parkway. It is recommended that the service size on private after the meter pit remains at least 2-inches in order to avoid significant pressure loss due to pipe friction.
- Approved backflow prevention devices must be installed on each service line prior to service activation. Please refer to the PWD website for more information on cross-connection control policies.
- Please note that PWD's Terms and Conditions require that a service to one parcel cannot serve another parcel. If in the future this parcel is subdivided, a separate service will be required.
- The Portland Water District does not have record of any other existing infrastructure in public roads and recommends a survey and test pitting be performed by the development team prior to construction. Any conflicts that arise during construction are at the risk of the developer and may result in job shutdown until new plans are submitted by the developer and reviewed and approved by PWD.

Prior to construction, the owner or contractor will need to make an appointment to complete a service application form and pay all necessary fees. The appointment shall be requested through MEANS@pwd.org or by calling 207-774-5961 ext. 3199. Please allow (3) business days to process the service application paperwork. PWD will guide the applicant through the new development process during the appointment.

Existing Site Service

According to District records, the project site does not currently have existing water service.

Water System Characteristics

According to District records, there is an X-inch diameter material water main in Street and a public fire hydrant located approximately XX feet from the site. Recent flow data is not available in this area. The most recent static pressure reading was XX psi on Date.

Public Fire Protection

The installation of new public hydrants to be accepted into the District water system will most likely not be required. It is your responsibility to contact the Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

Private Fire Protection Water Needs

You have indicated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact MEANS to request a hydrant flow test and we will work with you to get more complete data.

Should you disagree with this determination, you may request a review by the District's Internal Review Team. Your request for review must be in writing and state the reason for your disagreement with the determination. The request must be sent to MEANS@PWD.org or mailed to 225 Douglass Street, Portland Maine, 04104 c/o MEANS. The Internal Review Team will undertake review as requested within 2 weeks of receipt of a request for review.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District



Robert A. Bartels, P.E.
Senior Project Engineer

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991

Bradley Roland, P.E.
Water Resources Division

Date: 07/16/2018

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: 250 Riverside Industrial Parkway

Chart Block Lot Number: 330A-B-1, 330A-B-4, 330A-B-11

Proposed Use: Property Services Business
Previous Use: Undeveloped
Existing Sanitary Flows: n/a GPD
Existing Process Flows: n/a GPD

Description and location of City sewer that is to receive the proposed building sewer lateral.

The building lateral will be connected to the existing main located within the existing sewer easement. +/- 442 LF of 6" service line and two new SMH will be installed as part of the proposed connection. See enclosed Utility Plan.

Site Category		
	Commercial *(see part 4 below)*	X
	Industrial *(complete part 5 below)*	
	Governmental	
	Residential	
	Other *(specify)*	

Clearly, indicate the proposed connections, on the submitted plans.

2. Please, Submit Contact Information.

City Planner's Name: Jean Fraser Phone: (207) 874-8728, Portland Planning
Owner/Developer Name: Two Eisenhower Drive LLC
Owner/Developer Address: PO Box 1120, Portland, ME 04104
Phone: (207) 854-5056 Fax: E-mail: dmachesney@prattabbott.com
Engineering Consultant Name: Sebago Technics, Inc. c/o Shawn M. Frank, P.E.
Engineering Consultant Address: 75 John Roberts Road, Suite 4A, S. Portland, ME 04106
Phone: (207) 200-2062 Fax: (207) 856-2206 E-mail: sfrank@sebagotechnics.com

Note: Consultants and Developers should allow +/- 15 days, for capacity status, prior to Planning Board Review.

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 1200 GPD
Peaking Factor/ Peak Times: 6 AM - 8 AM
Specify the source of design guidelines: *(i.e.__"Handbook of Subsurface Wastewater Disposal in Maine," __ "Plumbers and Pipe Fitters Calculation Manual," __ Portland Water District Records, Other (specify)* State of Maine Wastewater Disposal Rules

Note: Please submit calculations showing the derivation of your design flows, either on the following page, in the space provided, or attached, as a separate sheet.

* 100 Employees x 12 GPD/employee = 1,200 GPD
* Approximately 80 employees leave facility for majority of day and work off premises

4. Please, Submit External Grease Interceptor Calculations.

Not Applicable

Total Drainage Fixture Unit (DFU) Values: _____

Size of External Grease Interceptor: _____

Retention Time: _____

Peaking Factor/ Peak Times: _____

Note: In determining your restaurant process water flows, and the size of your external grease interceptor, please use The Uniform Plumbing Code. Note: In determining the retention time, sixty (60) minutes is the minimum retention time. Note: Please submit detailed calculations showing the derivation of your restaurant process water design flows, and please submit detailed calculations showing the derivation of the size of your external grease interceptor, either in the space provided below, or attached, as a separate sheet.

5. Please, Submit Industrial Process Wastewater Flow Calculations

Not Applicable

Estimated Industrial Process Wastewater Flows Generated: _____ GPD

Do you currently hold Federal or State discharge permits? Yes ____ No ____

Is the process wastewater termed categorical under CFR 40? Yes ____ No ____

OSHA Standard Industrial Code (SIC): *(http://www.osha.gov/oshstats/sicser.html)*

Peaking Factor/Peak Process Times: _____

Note: On the submitted plans, please show where the building's domestic sanitary sewer laterals, as well as the building's industrial-commercial process wastewater sewer laterals exits the facility. Also, show where these building sewer laterals enter the city's sewer. Finally, show the location of the wet wells, control manholes, or other access points; and, the locations of filters, strainers, or grease traps.

Note: Please submit detailed calculations showing the derivation of your design flows, either in the space provided, or attached, as a separate sheet.

Portland, Maine Yes. Life's good here.

Christopher C. Branch, P.E.
Director of Public Works

Date: January 3, 2019

Re: Wastewater Capacity Authorization

Address: 250 Riverside Industrial Parkway
Applicant: Two Eisenhower Drive, LLC

Planner: Jean Fraser

Anticipated Wastewater Flow:

Estimate of Anticipated Design Flows				
Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Existing flow to be removed				
Vacant				0
Proposed flow				
Employees at place of employment with no showers	# Employees	100	12 GPD/Employee	1200
			Net Change	**+ 1200**
*Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition				

Comments:
The Department of Public Works, which includes the Water Resource Division, have reviewed and determined that the downstream sewers from the project address have the capacity to convey the estimated dry weather wastewater flows which will be generated from this development.

You are reminded that the sewers you are proposing to connect into convey both sanitary and stormwater (Combined Sewer) and therefore a backflow preventer is suggested.

If the City can be of further assistance, please contact me at all 874-8840 or brad@portlandmaine.gov

Sincerely,
CITY OF PORTLAND

Bradley A. Roland, P.E.
Senior Project Engineer

CC:
Jeffrey Levine, Director, Department of Planning and Urban Development, City of Portland

Stuart O'Brien, Planning Director, Department of Planning and Urban Development, City of Portland
Barbara Barhydt, Development Review Services Mgr., Dep't. of Planning and Urban Development, City of Portland

Keith Gray, City Engineer/Engineering Manager, Portland Department of Public Works

Nancy Gallinaro, Water Resources Manager, Portland Department of Public Works
Ben Pearson, Compliance Coordinator, Portland Department of Public Works
John Emerson, Wastewater Coordinator, Portland Department of Public Works

Lauren Swett, Woodard & Curran, DPW Development Review
Scott Firmin, Director of Wastewater, Portland Water District
Charlene Poulin, Wastewater Chief Operator – Systems

27: Site Design

Massing, Ventilations and Wind Impact (14-526 (d) 1)

- Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Windy study, if applicable

  Not applicable.

- Bulk, location or height impacts on adjoining structures
- Identify and located HVAC equipment and venting away from public spaces and residential properties
- Identify screening and manufacturing specifications for noise, if applicable

  Not applicable.

a. The bulk and height of the proposed building will not result in health or safety problems due to reduction in ventilation to abutting structures. Please see the site plan.

b. The bulk, location, and height of the proposed building will not minimize the value or utility to neighboring structures. The proposed development is consistent with other neighborhood properties and is an allowed use in the district. Refer to the plan set.

c. The HVAC venting mechanisms have not been formally sited or sized. The venting system will be construction in accordance with the requirements of this section requiring that they be directed away from public spaces. There are no adjacent residential properties.

28: Site Design

Shadows (14 526 9d) 2), if applicable

- Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)

Not applicable. There are no publicly accessible open spaces areas adjacent to the property.

29: Site Design

Snow and Ice Loading (14-526 (d) 3)

- Building design to prevent snow and ice from loading or falling onto adjacen properties or public ways

The building is situated on the site to avoid significant amounts of accumulated snow and ice from loading or falling onto adjacent properties or public ways. See Site Plan for building location.

30: Site Design

View Corridors (14-526 (d) 4), if applicable

- Protection of designated view corridors (Portland Design Manual, Appendix 1)

Not applicable. The site is not located in a designated view corridor.

31: Site Design

Historic Resources (14-526 (d) 5)

- Identify developments within Historic Districts or affecting Desginated Landmarks
- Certificate of Appropriateness or other evidence
- Identify Developments within 100 feet of Historic Districts of affecting Designated Landmarks. Advisory HP review may be required
- Address preservation and documentation of Archaelogical Resources

The proposed development is not located in a City Historic District and will not affect a Designated Landmark. Per the enclosed inquiry response from Maine Historic Preservation, dated 07/17/17, the project will not affect identified historic or archaeological features.

SEBAGO
TECHNICS
CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

RECEIVED
JUL 03 2018
0843-18

16360
June 25, 2018

Mr. Kirk Mohney, State Historic Preservation Officer
Maine Historic Preservation Commission
State House Station 65
Augusta, Maine 04333

Re: 250 Riverside Industrial Parkway, Portland
Tax Parcels: 330A-B-1, 330A-B-4, 330A-B-11
Record Owner: Two Eisenhower Drive, LLC

Dear Mr. Mohney,

Sebago Technics, Inc. has been retained for services related to the construction of a new property maintenance services facility building at a wooded site located at 250 Riverside Industrial Parkway in the City of Portland. Site improvements include the construction of a new ±12,000 square foot two-story metal building, drive/parking and other associated site improvements. The site is located in a moderate impact industrial zone (IM) and consists of three tax parcels totaling ±12.4 acres bounded to the west by the Maine Turnpike (I-95) and to the east by Riverside Industrial Parkway.

The abutting and nearby properties include commercial buildings housing a NAPA Distribution Center Annex, Titan Mechanical, Maintenance Technology Co., etc. which are typical of, and consistent with, the industrial zoning along Riverside Industrial Parkway. No residential properties abut the site and there are no views to or from the project area from residential areas.

Sebago Technics is currently working on a regulatory permit applications for the proposed site development and we respectfully request a site review by the Commission for the presence of any archaeological or historic sites within or adjacent to the project area determined in accordance with the provisions of the National Historic Preservation Act 36 CFR, Part 800, Section 106.

We have enclosed a U.S.G.S. Topographic location map and aerial photograph from the City GIS for your reference. If you have any questions or require additional information please contact me at snichols@sebagotechnics.com or directly at (207) 200-2120.

Sincerely,

SEBAGO TECHNICS, INC.

Stefanie Nichols

Stefanie Nichols
Permitting Specialist/Project Coordinator

enc.

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohney

Kirk F. Mohney,
State Historic Preservation Officer
Maine Historic Preservation Commission

7/17/18
Date

32: Site Design

Exterior Lighting (14-526 (d) 6)

- Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12)
- Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)

(i) Full cut-off lighting will be installed at building entrances along the building faces, as necessary, to provide illumination levels for safety, comfort and convenience of occupants and users of the site. Light fixture cut sheets are included in this submittal. The applicant requests a temporary submittal waiver for the Photometric Plan. See Waiver Table.

(ii) The site development does not abut residential uses therefore no house-side shielding is necessary.

GEOPAK SERIES SIZE 1 LED
Architectural Wallpack
TRP1/RDI1/QSP1

NEW

Cat.#	
Job	Type

HUBBELL Outdoor Lighting

Approvals

SPECIFICATIONS

APPLICATIONS
- Small sized architectural wallpacks in three stylish shapes with molded contours to accentuate building architecture. Provides excellent illumination in energy-saving LED systems.
- Back box accessory available for surface conduit application.

Construction:
- Housing is made from die-cast aluminum with a hinged back-plate for ease of installation and maintenance.
- The LED bezel and trim-plate are made of stainless steel.
- Five powder coat standard finishes, plus custom color options.
- Wet Location Listed to UL924 and UL1598 Standard.

LED:
- 12 high power LEDs delivering up to 3,000 lumens.
- Up to 118 lumens per watt
- Type II, III and IV distributions for a wide variety of applications.
- Zero uplight (UO), dark sky, neighbor friendly

Electrical:
- 120-277 operation, 50/60Hz
- 0-10V dimming driver standard
- 10kA surge protector
- Photocell and occupancy sensor options available for complete on/off and dimming control

Battery Backup:
- Intergral Battery Backup provides emergency lighting for the required 90 minute path of egress.
- Includes a long-life Lithium Iron Phosphate battery with optional battery heater for cold temperature application.
- Utilizes 4 LEDs in emergency mode with 657 lumens. Each of the 4 LEDs in emergency are designed to function independently in the unlikely event of a single LED malfunction
- Spectron® self-testing/self-diagnostic electronics are included standard
- Independent dedicated driver and LED array for battery/emergency mode operation.

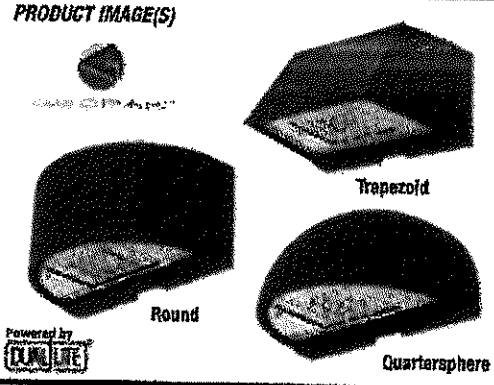
Installation:
- Universal plate for mounting to standard 3 1/2" and 4" square electrical boxes. All connections are made from connections at the rear of the unit.
- Optional back-box accessory available for surface conduit application. See BB-Geo accessories.

Listings:
- UL 1598 listed for use in wet locations
- Drivers IP66 and RoHS compliant
- DesignLights Consortium® (DLC) qualified. Please refer to the DLC website for specific product qualifications at www.designlights.org

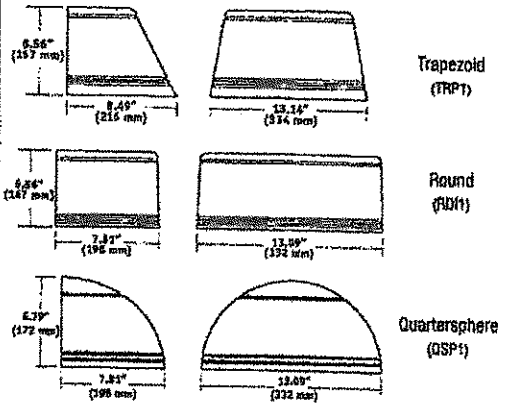
Warranty:
- For more information visit:

http://www.hubbelloutdoor.com/resources/warranty/

PRODUCT IMAGE(S)



DIMENSIONS



SHIPPING INFORMATION

Catalog Number	Weight (lbs)	Carton Dimensions		
		Length Inch (cm)	Width Inch (cm)	Height Inch (cm)
TRP1	11.5	17.0	9.9	10.0
RDI1	11.5	16.0	11.0	9.25
QSP1	10.5	17.0	9.6	10.5

CERTIFICATIONS/LISTINGS

C SA US

*3000K and warmer CCTs only

ORDERING INFORMATION

ORDERING EXAMPLE: TRP-12L-20-4K-3-1-BL-SCP-EH

HOUSING		VERSION		WATTAGE		CCT/CRI		DISTRIBUTION		VOLTAGE		FINISH		CONTROL OPTIONS		OPTIONS	
TRP1	Trapezoid	12L	12 LEDS	15	15 watts	3K7	3000K, 70CRI	2	Type II	U	120-277	BL	Black	PCU	Button Photocell	F[4]	Fusing (only available with STD fixture configuration, 120-277V only)
RDI1	Radius			20	20 watts	4K7	4000K, 70CRI	3	Type III	1	120	DB	Bronze	SCP[2,3]	Programmable Motion Sensor	E[1]	Battery Pack (0°C)
QSP1	Quartersphere			30	30 watts	5K7	5000K, 70CRI	4	Type IV	2	208	GR	Gray	SPECIFY SCP HEIGHT		EH[1]	Battery Pack (-30°C) with heater
										3	240	PS	Platinum	8F	Up to 8ft mount height		
										4	277	WH	White	20F	Up to 20ft mount height		
												CC	Custom				

[1] Voltage specific (120 or 277V only)
[2] Must order minimum of one remote control to program dimming settings, 0-10V fully adjustable dimming with automatic twilight calibration and different lamp delay settings, 120-277V only
[3] UO option not applicable, included in sensor
[4] Must specify input voltage (120, 208, 240 or 277)

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ACCESSORIES - Order separately

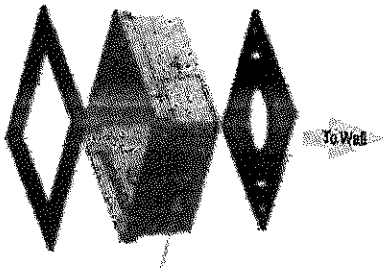
Catalog Number	Description
SCP-REMOTE[2]	Remote control for SCP option. Order at least one per project to program and control.
BB-GEO-XX	Back box with 4 - 1/2" threaded conduit holes, specify finish by replacing "XX" with finish selection, eg. Dark Bronze "DB"

[2] Must order minimum of one remote control to program dimming settings, 0-10V fully adjustable dimming with automatic daylight calibration and different time delay settings. 120V-277V only



BB-GEO-XX – Mounted to luminaire

BB-GEO-XX



Fixture gasket 4 – 1/2" conduit entries Wall gasket

PERFORMANCE DATA (AC/Standard Configurations)

# OF LEDS	DRIVE CURRENT	SYSTEM WATTS	DIST. TYPE	5K (5000K nominal, 70 CRI)					4K (4000K nominal, 70 CRI)					3K (3000K nominal, 70 CRI)				
				LUMENS	LPW	B	U	G	LUMENS	LPW	B	U	G	LUMENS	LPW	B	U	G
12	350mA	13.9	2	1635	118	1	1	1	1577	113	1	1	1	1497	108	1	1	1
			3	1613	116	1	0	1	1556	112	1	0	1	1477	106	1	0	1
			4	1607	116	0	0	1	1550	111	0	0	1	1471	106	0	0	1
	500mA	19.9	2	2288	114	1	1	1	2175	109	1	1	1	2077	104	1	1	1
			3	2245	113	1	0	1	2140	108	1	0	1	2049	103	1	0	1
			4	2229	112	0	0	1	2150	108	0	0	1	2041	103	0	0	1
	700mA	28.2	2	2942	104	1	1	1	2885	102	1	1	2	2721	96	1	1	1
			3	2912	103	1	0	1	2836	101	1	0	1	2685	95	1	0	1
			4	2892	103	1	0	1	2789	99	1	0	1	2674	95	1	0	1

Electrical Data

Input Power Consumption

Drive Current (mA)	Input Voltage (V)	System Power (w)	Current (Amps)
350mA	120	13.9	0.12
	277		0.05
500mA	120	19.9	0.17
	277		0.07
700mA	120	28.2	0.24
	277		0.10

Battery backup units consume additional power during charging (maximum 32.2 watts for E, 50.7 watts for EH)

Projected Lumen Maintenance

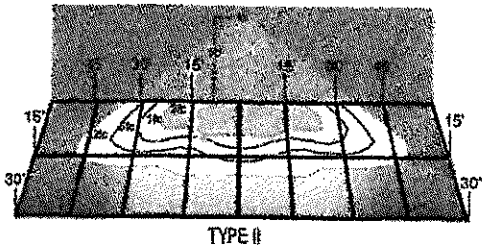
Ambient Temp.	Operating Hours 0	25,000	50,000	TM-21-11' 60,000	100,000	L70 (hours)
25°C/77°F	1.00	0.98	0.97	0.95	0.91	>345,000
40°C/104°F	1.00	0.96	0.95	0.92	0.87	>268,000

LUMINAIRE AMBIENT TEMPERATURE FACTOR (LATF)

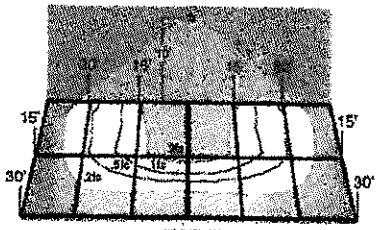
AMBIENT TEMPERATURE		LUMEN MULTIPLIER
0° C	32° F	1.02
10° C	50° F	1.01
20° C	68° F	1.00
25° C	77° F	1.00
30° C	86° F	1.00
40° C	104° F	0.99
50° C	122° F	0.98

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

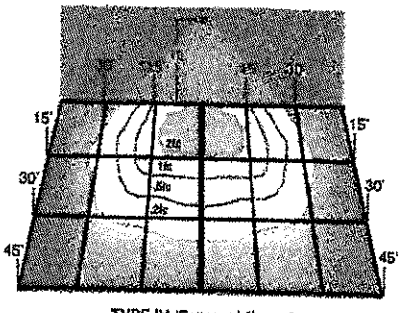
PHOTOMETRIC REPORTS
(30w, 4000K shown)



TYPE II



TYPE III



TYPE IV (Forward throw)

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GeoPak - Battery Back Up

Functional Circuitry: Transient surge protection device on AC input. Upon failure of the normal utility power, an LED driver is automatically activated to power the emergency LEDs. Upon resumption of normal utility power, the LED driver is turned off, and the battery is recharged through a micro-controller based 3-stage charger. The battery is a maintenance-free Lithium Iron Phosphate (LiFePo) type. A low voltage battery disconnect (LVD) feature protects the battery from severe damage during prolonged power failures. Manual testing is available at any time using the push-to-test button. The optional heater features a heating wrap and thermostat to maintain optimal battery temperature during charge or discharge. The GeoPak includes the following features:

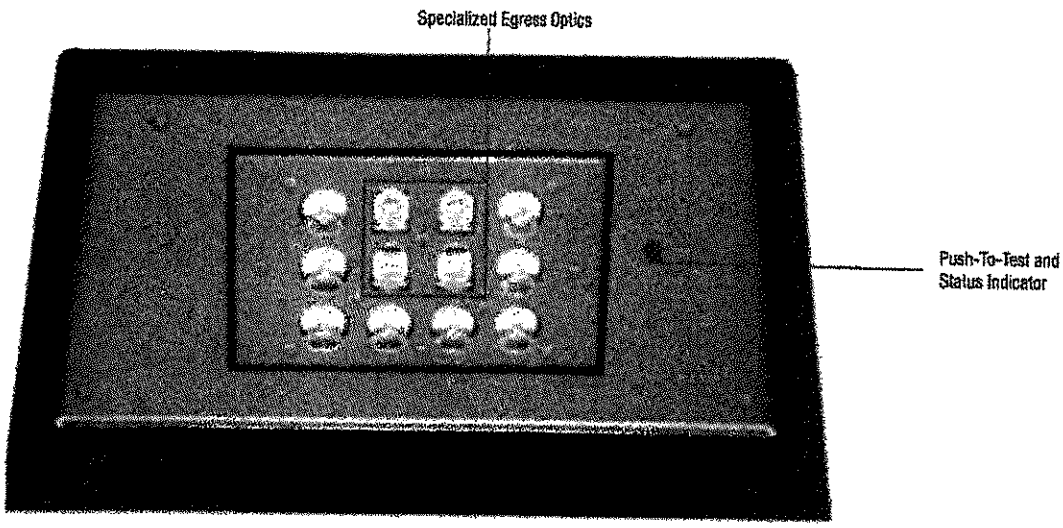
- Battery re-charge within 24 hours
- AC Lock-out circuit
- Self-diagnostics monitors LED status, LED driver circuit, battery capacity and charger function and displays any fault detection by means of a flashing code.
- Self-Test feature runs a 1 minute test once a month and an alternating 30 or 60 minute test once every 6 months. Multi-color LED indicator provides visible fault detection and charging status.
- User initiated 1, or 90-minute system test feature
- 15 minute re-transfer delay
- Automatic unit transfer in brown-out conditions (below 80% of nominal AC input voltage).

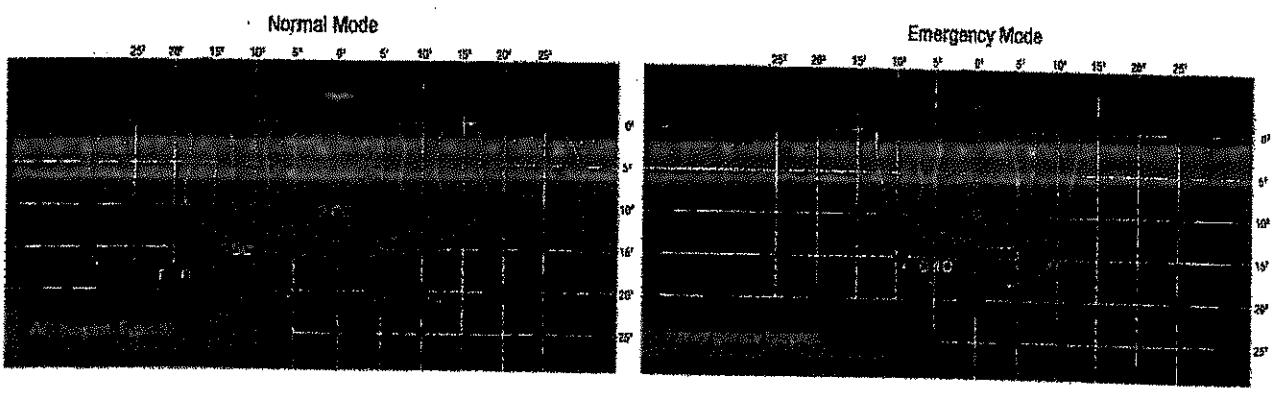
Emergency Photometric Performance (1 fc average .1 fc minimum)

28' multi-unit spacing at 10' MH with 0/30/10 reflectances on a 6' path

26' x 10' single unit coverage at 10' MH with 0/30/10 reflectances

6' x 19' forward throw coverage at 10' MH with 0/30/10 reflectances





Provides Life Safety Code average illuminance of 1.0 fc. Assumes open space with no obstructions.

Diagrams for illustration purposes only, please consult factory for application layout.

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33: Site Design

Noise and Vibration (14-526 (d) 7)

- Evidence of noise levels for equipment, such as equipment specifications, to demonstate consistency with zoning requirements

(i), (ii) All heating, ventilation and air conditioning equipment (HVAC), air handling units (AHU), emergency generators, and similar equipment will meet applicable state and federal emission requirements and generator testing timing and noise levels shall be performed in accordance with City standards. A temporary submittal waiver from manufacturer verification of emissions is requested. See Waiver Table.

34: Site Design

Signage and Wayfinding (14-526 (d) 8), if applicable

- Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff
- Proposed commercial and directional signage on site

All signage will meet applicable requirements of Divison 22 of the City Code and the additional provisions of this section. See Plan Set.

35: Site Design

Zone Related Design Standards (14-526 (d) 5)

- Address Historic Preservation Design Review, if applicable
- Address any applicable design review standards by zone
- Address submission requirements from Design Manual, page 1, addressing neighborhood context
- Description of exterior materials, color, finish, and samples

The project site is not located subject to Historic Design Review or design review standards based on zoning.

Construction Management Plan

July 16, 2018

Revised December 13, 2018

City of Portland

250 Riverside Industrial Parkway – Site Development

Applicant: Two Eisenhower Drive LLC

Purpose:

Construction Management Plans shall be depicted on the projects site plan and will include the overall planning, coordination, and control of a construction site, including phases as applicable, from beginning to completion. The City's goal for a construction management plan is to support a safe construction site and protect the public safety, accessibility (including preserving accessible pedestrian, bicycle, and vehicular modes of transport throughout the city), and welfare during construction. In addition, the construction management plan shall minimize construction impacts in their duration and magnitude to the surrounding area and develop an effective communication process for resolving concerns and conflicts.

Project Narrative:

The applicant/developer is proposing a new property maintenance services building off Riverside Industrial Parkway in the City of Portland. This project will disturb approximately 5.2 acres and the work will include:

1. Install erosion control measures;
2. Strip and stockpile loam for reuse;
3. Excavate and stockpile borrow from road and under drained soil filter(s);
4. Coordination with respective utilities regarding connections and required inspections;
5. Cut Riverside Industrial Parkway, as necessary for utilities service connections;
6. Sanitary sewer connection coordination at existing main (interior lot easement);
7. Installation of access drive stream crossing, utilities and drainage;
8. Installation of access drive base course;
9. Installation of under drained soil filters;
10. Building pad and gravel yard preparation;
11. Installation of binder course of asphalt for access drive;
12. Building construction;
13. Service connections;
14. Final yard grading and access drive wearing course asphalt installation;
15. Installation landscaping and other vegetation;
16. Fencing/gate installation;
17. Re-apply the stripped loam, seed and mulch to disturbed areas;
18. Temporary erosion control measures removed.

Performance Guarantees, Inspection Fees, Preconstruction Meeting, and Permits:

As a Level III Site Plan review, the developer of the project will be required to submit a performance guarantee for the proposed infrastructure work. This performance guarantee and site development inspection fees will be based upon a cost estimate submitted and approved by the City. The guarantee will be a letter of credit from an approved bank or credit union, deposited in a bank-held escrow account or a City- held escrow account. These fees/guarantees will need to be paid and in place prior to scheduling the pre-construction meeting.

As this project involves work within the right-of-way, the contractor will be responsible for obtaining street opening and street occupancy permits form the Department of Public Works. All construction in the right-of-way shall conform to Chapter 25 and all sewer and stormwater construction/connections shall conform to Chapters 24 & 32 of the Land Use Code. These permits will be for the connection to existing utilities and the driveway connection at Riverside Industrial Parkway.

No blasting in anticipated for this project.

Construction Administration and Communication:

This project will be managed by a representation of the developer, Two Eisenhower Drive LLC along with a project manager from the land development construction firm hired by the developer.

1. Contact Person and contact information:
   - Developer (Two Eisenhower Drive LLC): c/o David Machesney (207) 854-5056.
   - Site Contractor: TBD.
   - Engineer (Sebago Technics, Inc.): Shawn M. Frank, P.E. (Direct Line, Work 200-2062).
2. Signage will be placed at the site that will include the above contact information. This signage will be removed when the infrastructure for the project are complete.
3. The representative for the contractor /developer will reach out to adjacent abutter to notify them of the commencement of constructions and the proposed time frame to complete the infrastructure/roadway improvements for the project.

Construction Schedule*:

- Site Plan Approval: Expected –September 2018.
- Preconstruction Meeting: September 2018
- Construction of entry drive and stream crossing: Approximately 6 weeks.
- Stormwater management features, building construction: Approximately 24 weeks
- Expected Completion – Approximately May 2019. Paving – Spring 2019.

* Dates are subject to change at the discretion of the engineer, depending on construction progress.

Estimated construction time: ---------- 32 Weeks (8 Months)
Erosion Control Measures Placed: ---------- Week 1
Site clearing and grubbing ---------- Weeks 2-6
Construction of drive subbase for access ---------- Weeks 3-5
Stream Crossing ---------- Week 3
Stormwater management construction ----------Weeks 4 – 12
Utility Improvements and access drive construction-----Weeks 4 – Week 6
Road base and asphalt binder coarse (prior to plant shutdown) Weeks 6- 8
Final entry drive paving----------Week 22
Final yard grading and compaction ---------- Week 20-22
Start final seeding on prepared areas----------Week 24
Biweekly monitoring of vegetative growth ----------Week 26
Re-seeding of areas, if needed---------- Week 26-32
Removal of erosion control devices ----------Upon Final Project Completion

1. From September 1st to May 31st, no person shall engage in construction activities generating noise exceeding fifty (50) decibels, between the hours of 7:00 p.m. and 7:00 a.m., of the following day within five hundred (500) feet of any buildings. From June 1st to August 31st construction activity may continue until 8:00 p.m.
2. Extended Hours or Night Work: Pursuant to Section 17-18, this section not apply to emergency utility work or "Situations where the public works authority or the office of building inspections determines that the construction activity is of a unique character which cannot reasonably be completed or performed during the permitted hours and which is not of a recurring nature, provided that prior to engaging in such activity the contractor or his representatives gives notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority."
3. Pursuant to Section 25-129: "Each permittee shall conduct and carry out excavation work in such manner as to avoid unnecessary inconvenience and annoyance to the general public and occupants of neighboring property. To the fullest extent practicable, the permittee shall take appropriate measures to reduce noise, dust and unsightly debris in the performance of the excavation work. Excavation work, including the use of any tool, appliance, or equipment, shall be performed between the hours of 7:00 a.m. and 10:00 p.m. only, exclusive of emergency work. Time waiver requests may be submitted to the public works authority for work outside of this time period and will be subject to neighborhood concerns. Excavation work shall not occur on Sundays, holidays or on major holiday weekends, unless expressly authorized by the public works authority or as a result of emergency need.
4. If allowed, no construction activity shall begin before 8:00 a.m. on a Saturday, Sunday or legal holiday.

5. All deliveries for materials will comply with the noise requirements listed above or be restricted to the hours allowed for construction work.

Security and Public Safety:

1. Prior to commencing construction, site contractor shall install a "Construction Ahead" signs to warn bicyclists and motorists of construction with the area.
2. Contractor shall be responsible for the setup of construction staging area before construction begins. Contractor may provide fencing for staging area at their discretion. Fenced in areas shall be provided with gates passable by emergency vehicles and equipped with a Knox locking device.
3. Contractor shall be responsible for the safe storage of materials or equipment on-site.
4. Contractor shall have weekly tailgate meetings which shall include discussion relative to security and public security.
5. Contractor shall develop a fire safety and emergency protocol and contact the nearest fire station to advise them of the ongoing construction project.
6. All excavations with the right-of-way shall be filled or plated at night. Excavations within the site shall be provided with adequate barricades or warnings (i.e. construction area tape around excavation) at night.

Construction Permitting and Traffic Control Plans:

1. Construction Activity in Public Streets: Construction activity in the public right-of-way is controlled by Chapter 25 Article VII of the City Code of Ordinances. Required licenses and permits, restrictions on activity, and fees & area are outlined in that Chapter. Rules and Regulations for Excavation Activity are available through the Street Opening Clerk at the Department of Public Works. At no time can construction activity including delivery vehicles close or block streets or affect public safety access without prior notice and approval of the Department of Public Works.
2. Sewer and Stormwater: Sewer and stormwater water system connections are controlled by Chapters 24 and 32 of the City Code of Ordinance. Required permits for new connections and/or abandonment of existing connections are available through the Street Opening Clerk at the Department of Public Works. Rules and Regulations for these utility systems are available through the City Engineer's office of the Department of Public Works and in Section II of the Technical Manual.
3. Traffic Control Plans: Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public.
    a. Contractor will be required to submit Maintenance of Traffic Plans for all construction within the right-of-way of Riverside Industrial Parkway.
    b. Flaggers will be required for temporary lane closures for construction.

c. Traffic Control signs shall not be placed where they are an obstruction to bicycles or pedestrians.

Site Management and Controls:

1. The land development contractor shall be responsible for the site managements during construction of site infrastructure. Building contractors will be responsible for the building site management.
2. Contractor will be responsible for providing and maintaining a dumpster during construction.
3. Contractor will install and maintain the construction entrance as shown on the plans and will maintain Riverside Industrial Parkway by including sweeping as necessary for removal of tracked materials.
4. Contractor shall be responsible for maintaining construction BMP's and executing good housekeeping measures as depicted on the approved plans and as included in the Inspection, Maintenance and Housekeeping Plan.
5. Dust controls: The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris.
6. Noise: The construction shall comply with Portland's requirements under Section 17-18 of the City Code and Section 25-129 on Noise, dust and debris. The Contractor and City will be responsible for adjusting work should noise become an issue.
7. Rodent Control is not expected for this project. Should it become necessary, it will be provided, if applicable, by a professional exterminator and consistent with Chapter 22 of the City Code or City of Portland Public Works.
8. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within the work zone.
    1) Snow/ice removal or commence automatically from (1" of snow and up) or Ice
    2) Remove snow as needed within the work zone, including parking spaces & not to block any driveways or site lines with the piles of snow.
    3) Clear all walks & ramps with the work zone
    4) Sand or Salt as needed
    5) Clear all basin basin or drainage structures to help snow melt
    6) This would include Monday-Friday Sat/Sunday/Holidays.
9. Site management and controls shall be discussed at each tailgate meeting including maintenance of BMP's and good housekeeping measures.

Erosion Control and Preservation of Trees:

1. The site contractor shall install all erosion and sedimentation controls as depicted on the approved erosion and sedimentation control plan prior to the pre-construction meeting for inspection by the City. The contractor shall regularly inspect the control measures, no less than weekly and after significant storm events, and maintain any installed temporary

or permanent stormwater management systems in working order. The contractor shall document all inspection activities and corrective actions and be prepared to provide these documents for inspection by the City, Maine Department of Environmental Protection upon request.
2. The site contractor shall maintain storage and of materials and equipment away from the tree drip lines in an effort to preserve vegetation at the construction limits.
3. To avoid potential adverse impact to bats, tree removal activities will not occur during the bat pup-rearing season. Tree removal activity shall be completed prior to June 1.

Construction Staging Area:

1. A Construction Management Plan is described on the site plan and depicts the location of the material (open storage) and equipment storage area. The exact location of these areas shall be up to the contractor but should be sufficiently away from any trees at the designated construction limit line.
2. Delivery Truck Holding Areas On-Site: The delivery holding area shall be adjacent to the site storage area shown on the plan and shall not be blocked during construction. On days when the construction activities require multiple truck deliveries, these deliveries will be carefully scheduled so that there is always adequate on-site area for the holding of the trucks until they can be unloaded. Once at the site all vehicles well be brought within the property and will make every attempt to avoid queueing on public streets.
3. Delivery Truck Holding Areas Off-Site: In the event that adequate on-site area for holding of trucks is not available, the contractor shall provide an area along the adjacent shoulder of Riverside Industrial Parkway for offloading. This area shall be provided within the buffer area of a maintenance of traffic area with the appropriate cones, advanced warning signs and flaggers as necessary. All off-loading shall occur from the project side of the truck and not within the roadway.

Parking During Construction:

1. Construction Parking: Parking for construction workers shall be on the site as indicted on the Construction Management Plan. No parking shall occur along Riverside Industrial Parkway. If sufficient space is not available on-site for parking, contractor shall make other parking arrangements and have workers brought or carpooled to the site.
2. Truck Routes and Volumes: All deliveries to and from site shall occur from Route 302 (Forest Avenue) and Riverside Street and proceed along Riverside Industrial Parkway to the site. Drivers for the contractors shall be advised weekly of the residential nature of portions of the site approach over Riverside Street and Route 302 (Forest Avenue) in the weekly tailgate meetings or by some other appropriate communication.

Prepared by:
Sebago Technics, Inc.

SEBAGO
TECHNICS
CIVIL ENGINEERING · SURVEYING · LANDSCAPE ARCHITECTURE

Maine Department of Environmental Protection
38 M.R.S.A. §§480-A to 480-BB
NRPA Tier 1 Application

for:

Property Services Facility
250 Riverside Industrial Parkway
Portland, Maine 04103

Applicant/Record Owner:

Two Eisenhower Drive, LLC
P.O. Box 1120
Portland, Maine 04104

Prepared by:

Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, Maine 04106

September 2018

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SEBAGO
TECHNICS

September 21, 2018
16360

Ms. Alison Sirois, Supervisor
Maine DEP, SMRO
Bureau of Land Resources
312 Canco Road
Portland, Maine 04103

Maine DEP Natural Resources Protection Act Application – Tier 1
Two Eisenhower Drive, LLC
250 Riverside Industrial Parkway, Portland

Dear Alison:

On behalf of applicant Two Eisenhower Drive, LLC, Sebago Technics, Inc. submits the enclosed Natural Resource Protection Act (NRPA) Tier 1 application for wetland impact associated with the proposed new property services facility to be located at 250 Riverside Industrial Parkway, Portland on property of applicant, Two Eisenhower Drive, LLC. The property is identified as Tax Map 330A, Lots B-1, B-4 and B-11 which is an undeveloped parcel totaling approximately 12.4 acres within the Riverside Industrial Park.

The proposed development is for the construction of one building with a footprint area of 11,200 square feet. The proposed new development will impact approximately ~~6,550~~ 6,849.50 square feet of freshwater wetland. The development of the site also includes the construction parking and an entry drive, utility services, stormwater management features and other associated site improvements associated with a property services company. The entry drive will cross a stream that is being permitted as a PBR under separate cover.

Please find the application, required attachments and fee enclosed. Thank you for your time and attention to the application. Please contact me if you have any questions or require additional information. Please note that a full copy of the DEP NRPA application and PBR submittal has been sent directly to the U.S. Army Corps of Engineers as part of their review request for the proposed stream crossing and wetland impact area.

Sincerely,

SEBAGO TECHNICS, INC.

Shawn M. Frank, P.E.
Project Manager

SMF/skn
Enc.

cc: D. Machsesney, Two Eisenhower Drive, LLC

AGENT AUTHORIZATION

APPLICANT/ OWNER	**Name**	Two Eisenhower Drive LLC		
PROPERTY DESCRIPTION	**Physical Address**	250 Riverside Industrial Parkway Portland, Maine 04103	**Map**	330A
			Lots	B-1, B-4, B-11
APPLICANT'S AGENT INFORMATION	**Name**	Shawn M. Frank, P.E.		
	Phone	(207) 200-2062	**Business Name & Mailing Address**	Sebago Technics, Inc. 75 John Roberts Road, Suite 4A South Portland, Maine 04106
		Project Manager		

APPLICANT SIGNATURE DATE

David Machesney, Representative
Two Eisenhower Drive, LLC

9/5/19

PLEASE TYPE OR PRINT NAME HERE

APPLICANT'S AGENT SIGNATURE DATE

PLEASE TYPE OR PRINT NAME HERE

APPLICATION FOR A NATURAL RESOURCES PROTECTION ACT PERMIT

➔PLEASE TYPE OR PRINT IN *BLACK INK ONLY*

1. Name of Applicant:	Two Eisenhower Drive, LLC c/o David Machesney	**5.Name of Agent:**	Shawn M. Frank, P.E. Sebago Technics, Inc.
2. Applicant's Mailing Address:	PO Box 1120 Portland, ME 04104	**6. Agent's Mailing Address:**	75 John Roberts Rd., Ste.4A S. Portland,ME 04106
3. Applicant's Daytime Phone #:	(207) 854-5056	**7. Agent's Daytime Phone #:**	(207) 200-2062
4. Applicant's Email Address: Required from *either* applicant or agent:	dmachesney@prattabbott.com	**8.Agent's E-mail Address:**	sfrank@sebagotechnics.com

9. Location of Activity: (Nearest Road, Street, Rt.#)	250 Riverside Industrial Parkway	**10. Town:**	Portland	**11. County:**	Cumberland

12. Type of Resource: (Check all that apply)

- ❑ River, stream or brook
- ❑ Great Pond
- ❑ Coastal Wetland
- ☒ Freshwater Wetland
- ❑ Wetland Special Significance
- ❑ Significant Wildlife Habitat
- ❑ Fragile Mountain

13. Name of Resource:

14. Amount of Impact: (Sq.Ft.) 6,849.50

Fill: ~~6,550~~ SF

Dredging/Veg Removal/Other:

15. Type of Wetland: (Check all that apply)

- ❑ Forested
- ❑ Scrub Shrub
- ❑ Emergent
- ❑ Wet Meadow
- ❑ Peatland
- ❑ Open Water
- ❑ Other_____

FOR FRESHWATER WETLANDS

Tier 1	*Tier 2*	*Tier 3*
❑ 0 - 4,999 sq ft. ☒ 5,000-9,999 sq ft ❑ 10,000-14,999 sq ft	❑ 15,000 – 43,560 sq. ft.	❑ > 43,560 sq. ft. or ❑ smaller than 43,560 sq. ft., not eligible for Tier 1

16. Brief Activity Description

Construction of a new property services business building, parking, entry drive, utilities and other associated site improvements requiring freshwater wetland fill.

17. Size of Lot or Parcel & UTM Locations: ❑ _____square feet, or ☒ 12.4 +/- acres UTM Northing: _____ UTM Easting: _____

18. Title, Right or Interest: ☒ own ❑ lease ❑ purchase option ❑ written agreement

19. Deed Reference Numbers:	Book#: 32031 Page: 39	**20. Map and Lot Numbers:**	Map #: 330A	Lot #: B-1, B-4 B-11	
21. DEP Staff Previously Contacted:	Alison Sirois	**22. Part of a larger project:**	❑ Yes ☒ No	**After-the-Fact:**	❑ Yes ☒ No
23. Resubmission of Application?	❑ Yes➔ ☒ No	**If yes, previous application #**		**Previous project manager:**	
24. Written Notice of Violation?	❑ Yes ➔ ☒ No	**If yes, name of DEP enforcement staff involved:**		**25. Previous Wetland Alteration:**	❑ Yes ☒ No

26. Detailed Directions to the Project Site: NE on Canco toward Tamaralane, Left on Washington, Continue to left at Shaw's traffic signal to stay on Washington. Left at Riverside Street, Left on Riverside Industrial Parkway, Site is on left approximately 400' beyond Milliken on left.

27. TIER 1	**TIER 2/3 AND INDIVIDUAL PERMITS**	
☒ Title, right or interest documentation	❑ Title, right or interest documentation	❑ Erosion Control/Construction Plan
☒ Topographic Map	❑ Topographic Map	❑ Functional Assessment (Attachment 3), if required
☒ Narrative Project Description	❑ Copy of Public Notice/Public Information Meeting Documentation	❑ Compensation Plan (Attachment 4), if required
☒ Plan or Drawing (8 1/2" x 11")	❑ Wetlands Delineation Report (Attachment 1) that contains the Information listed under Site Conditions	❑ Appendix A and others, if required
☒ Photos of Area	❑ Alternatives Analysis (Attachment 2) including description of how wetland impacts were Avoided/Minimized	❑ Statement/Copy of cover letter to MHPC
☒ Statement of Avoidance & Minimization		❑ Description of Previously Mined Peatland, if required
☒ Statement/Copy of cover letter to MHPC		

28. FEES Amount Enclosed: TB, $75.00

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

DEP SIGNATORY REQUIREMENT

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor a permit be issued.

CORPS SIGNATORY REQUIREMENT

USC Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry shall be fines not more than $10,000 or imprisoned not more than five years or both. I authorize the Corps to enter the property that is subject to this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

DEP SIGNATORY REQUIREMENT

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the address located on the front page of this application (see #4 for the applicant and #8 for the agent)."

SIGNATURE OF AGENT/APPLICANT

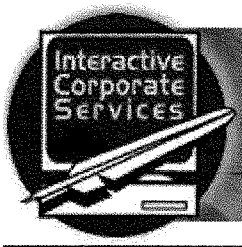
Date: 09/05/18

Signature of Agent _____ Date: _____

NOTE: Any changes in activity plans must be submitted to the DEP and the Corps in writing and must be approved by both agencies prior to implementation. Failure to do so may result in enforcement action and/or the removal of the unapproved changes to the activity.

(yellow)

Interactive Corporate Services



MAINE

Department of the Secretary of State

Bureau of Corporations, Elections and Commissions

Corporate Name Search

Information Summary

Subscriber activity report

This record contains information from the CEC database and is accurate as of: Thu Jun 28 2018 15:59:30. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
TWO EISENHOWER DRIVE, LLC	20021106DC	LIMITED LIABILITY COMPANY (DOMESTIC)	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
02/14/2002	N/A	MAINE

Other Names **(A=Assumed ; F=Former)**

NONE

Clerk/Registered Agent

GARY D. VOGEL
84 MARGINAL WAY, SUITE 600

PORTLAND, ME 04101 2480

Section 1

Right, Title, Interest

TRUSTEE'S DEED
(Maine Statutory Short Form)

KNOW ALL PERSONS BY THESE PRESENTS, that I, Cindy H. Andrews, as Trustee of Marital Trust B under the Carl D. Andrews Revocable Trust u/a dated April 1, 1986, as affected by an Order of the Cumberland County Probate Court, dated November 12, 2012, Docket # 2012-1403, by the power conferred by law, and every other power, for consideration paid, grant to Two Eisenhower Drive, LLC, a Maine limited liability company with an address of P.O. Box 1120, Portland, ME 04104, the real property described as follows:

Certain lots or parcels of land, with any buildings or improvements thereon, situated in the City of Portland, County of Cumberland and State of Maine, and being bounded and described as follows:

MAINE REAL ESTATE TAX PAID

PARCEL 1: A certain lot or parcel of land, with any buildings and improvements thereon, situated on the westerly side of Riverside Industrial Parkway in the City of Portland, County of Cumberland and State of Maine and further bounded and described as follows: BEGINNING at an iron set in the ground on the westerly side of said Riverside Industrial Parkway, which iron designates a point on the reverse curve of said Riverside Industrial Parkway at center line Station 39+81.64; from said point of beginning thence running by the westerly side of Riverside Industrial Parkway by a curve to the southwest having a radius of 1090.00 feet, a distance of 104.52 feet measured on the arc thereof to land now or formerly of the City of Portland; thence running North 54°58' West by said City of Portland land 84.22 feet to the northeasterly corner of land now or formerly of Rufus H. Jones; thence running North 45°38'30" West by said Jones land, 368.42 feet to an iron set in the ground at land of the Maine Turnpike Authority; thence running North 25°50' East by said Maine Turnpike Authority land 620.00 feet to an iron set in the ground at other land now or formerly of Area Development Council Project #1, Inc.; thence running South 46°54'30" East by said land now or formerly of said Area Development Council Project #1, Inc. herein, 507.64 feet to land conveyed by ADC Building Fund Incorporated to Davis-Greene Co. by deed dated December 18, 1962 and recorded in the Cumberland County Registry of Deeds in Book 2723, Page 182; thence running South 19°49' West by said Davis-Greene Co. land 161.78 feet to a corner in said Davis-Greene Co. land; thence running South 56°08'30" East by said Davis-Greene Co. land 106.38 feet to the westerly side of said Riverside Industrial Parkway; thence by said Riverside Industrial Parkway by a curve to the southwest having a radius of 1091.67 feet, a distance of 356.31 feet measured on the arc thereof to the point of beginning.

The above-described premises are subject to an easement given by ADC Building Fund Incorporated to the City of Portland for a sewer line as set forth in the deed from ADC Building Fund Incorporated, dated October 18, 1965 and recorded in the Cumberland County Registry of Deeds in Book 2931, Page 430.

EXCEPT, so much of the above which was conveyed to John E. Burrell by Area Development Council Project #1, Inc. by deed dated December 16, 1977 and recorded in said Registry of Deeds in Book 4149, Page 262.

Also excepting that parcel of land conveyed by John E. Coney, Jr. to John E. Burrell by deed dated February 18, 1981 and recorded in said Registry of Deeds in Book 4743, Page 110.

PARCEL 2: Also, another certain lot or parcel of land, with any buildings or improvements thereon, situated on the westerly side of Riverside Industrial Parkway in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows: BEGINNING at an iron pipe on the westerly side of Riverside Industrial Parkway at the southeast corner of the lot of land conveyed by Greater Portland Building Fund, Inc. to Aetna Cartage Company by deed dated April 18, 1972 and recorded in the Cumberland County Registry of Deeds in Book 3226, Page 290. Said corner also marks the line of a City of Portland sewer right of way, known as the Dole Branch, which is located on the lot herein conveyed; thence from said point of beginning and by said Aetna Cartage Company land running South 65°57' West 328.93 feet to an iron; thence continuing by said Aetna Cartage Company land and by a sewer right of way known as the Presumpscot North Maine Interceptor, North 24°03' West 303.34 feet to an iron pipe; thence through said sewer right of way North 71°22' West 106.03 feet to land of the Maine Turnpike Authority; thence by said Maine Turnpike Authority land South 25°50' West 527.41 feet to an iron at the northwest corner of land conveyed by Greater Portland Building Fund to John E. Coney, Jr. by deed dated March 29, 1973 and recorded in said Registry of Deeds in Book 3376, Page 51; thence by said Coney land South 46°54'30" East 507.64 feet to an iron pipe at land conveyed by ADC Building Fund Incorporated to Davis-Greene Co. by deed dated December 18, 1962, and recorded in said Registry of Deeds in Book 2723, Page 182; thence by said Davis-Greene Co. land North 19°49' East 320.12 feet to an iron pipe; thence continuing by said Davis-Greene Co. land North 68°40'30" East 196.31 feet to an iron pipe on the westerly side of Riverside Industrial Parkway; thence by said Riverside Industrial Parkway North 18°38' Fast 287.36 feet to the point of beginning.

Said above lot contains 279,815 square feet or 6.42 acres in accordance with a survey made by H.I. & E.C. Jordan, Surveyors.

Said above-described courses are based on true meridian.

PARCEL 3: A certain lot or parcel of land situated westerly of Riverside Industrial Parkway and Northerly of Milliken Street in the City of Portland, County of Cumberland, State of Maine, to wit:

COMMENCING at a point on the westerly side of land now or formerly of the Portland Terminal Company at the northerly corner of the land now or formerly owned by the Portland Water District;

Thence South 55°14'20" West, 71.28 feet along said Water District Land to a point;

Thence North 21°15'40" West, 17.82 feet along said Water District Land to a point;

Trustees of even date herewith executed by Richard A. Carriuolo and Cindy H. Andrews, as Trustees of Marital Trust B under the Carl D. Andrews Revocable Trust u/a dated April 1, 1986, as affected by Order of the Cumberland County Probate Court, dated November 12, 2012, Docket #2012-1403 and pursuant to Article VIII of the Agreement and Indenture of Trust establishing the Carl D. Andrews Revocable Trust u/a dated April 1, 1986, Cindy H. Andrews, acting singly, is duly authorized to execute and deliver this deed.

WITNESS our hands and seals, this 10th day of January, 2015.

WITNESS:

Cindy H. Andrews, as Trustee of Marital Trust B under the Carl D. Andrews Revocable Trust u/a dated April 1, 1986, as affected by Order of the Cumberland County Probate Court, dated November 12, 2012, Docket #2012-1403

~~STATE OF MAINE~~ Colorado
~~CUMBERLAND,~~ ss. Denver County

January 10, 2015

Then personally appeared the above-named Cindy H. Andrews, in her said capacity as Trustee and acknowledged the foregoing instrument to be her free act and deed as Trustee and the free act and deed of said Trust, before me,

Notary Public
Printed Name:

ZACHARY W. JOHNSON
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20144024056
MY COMMISSION EXPIRES JUNE 16, 2018

Thence South 74° 52' 45" West, 31.62 feet along said Water District Land to a point near an iron pipe;

Thence South 55°51'08" West, 75.26 feet along land now or formerly owned by Milliken Street LLC to a point near a 5/8" rebar;

Thence North 21°16'37" West, 555.77' feet along land said Milliken Street LLC land to a 5/8" rebar;

Thence South 68°44'47" West, 114.56 feet along said Milliken Street LLC land to a point near a 5/8" rebar;

Thence North 14°55' 55" West, 14.08 feet along said Milliken Street LLC land, passing over an iron pipe, said pipe distant 1.2 feet from the terminus of said course, to a point;

Thence South 75°08'46" West, 328.45 feet along said Milliken Street LLC land to a point;

Thence South 13°13'08" West, 61.39 feet along said Milliken Street LLC land to a point;

Thence South 68°44'47" West, 143.78 feet to a point in the easterly line of Milliken Street;

Thence along said easterly line North 56°10'30" West, 92.98 feet to a point;

Thence North 56°04'53" West, 117.32 feet to a point;

Thence continuing along the easterly line of Milliken Street North 56□04'53" West, 280.50 feet to a point;

Thence North 63°50'00" West, 258.77 feet to a point at the intersection of said easterly line and the southern line of land conveyed to ADC Building Fund, Inc. by Davis-Greene Co. dated December 18, 1962, recorded in Book 2723, Page 182;

Thence leaving said easterly line along said southern line North 55°47'03" West, 91.92 feet to a point at the intersection of said easterly line and said southern line;

Thence leaving said southern line along said easterly line of Milliken Street;

Thence leaving said easterly line North 55°47'03" West, 103.56 feet to a found iron pipe in the westerly right-of-way line of said Riverside Industrial Parkway at the true point of beginning;

Thence North 55°47'03" West, 106.38 feet to a point;

Thence North 19°50'40" East, 481.46 feet to a point;

Thence North 68°40'30" East, 196.31 feet to a found pipe in the said westerly right-of-way line;

Thence along said westerly right-of-way line South 18°39'48" West, 285.34 feet to a point;

Thence along a curve deflecting to the right having a radius of 1091.67', on arc of 357.01', a chord bearing of South 28°01'49" West, a chord of 355.43', to the TRUE POINT OF BEGINNING, containing 1.85 acres.

SUBJECT TO:

a. Easement to Central Maine Power Company and New England Telephone and Telegraph Company as set forth in an instrument dated June 8, 1965 and recorded in said Registry of Deeds in Book 2937, Page 381.

b. Certificate of Taking of Property by City of Portland by instrument dated July 20, 1964 and recorded in the Cumberland County Registry of Deeds in Book 2881, Page 318.

To the extent not otherwise conveyed above, also hereby releasing all right title and interest in and to the following described property:

BEGINNING at a 1-1/2" iron pipe on the westerly right-of-way line of Riverside Industrial Parkway at a northeasterly corner of land N/F of Carl D. Andrews Marital Deduction Trust as recorded in Deed Book 19863, Page 40, Cumberland County Registry of Deeds (CCRD);

THENCE N 55°52'49" W along the northerly line of said Trust 105.92' to a 1" iron pipe;

THENCE N 19°52'56" E along an easterly line of said Trust 481.06' to a 1" iron pipe;

THENCE N 68°26'23" E along a southeasterly line of said Trust 196.43 ' to a #5 rebar. Said rebar being on the westerly right-of-way line of Riverside Industrial Parkway;

THENCE S 18°41'06" W along the westerly right-of-way line of Riverside Industrial Parkway 285.32' to a point of curvature in said right-of-way;

THENCE on a curve to the right along the westerly right-of-way line of Riverside Industrial Parkway 357.07' to the POINT OF BEGINNING. Said curve has a radius of 1091.67' and a chord of S 28° 03'19" W 355.48'.

The above described parcel contains 80,418 s.f. or 1.85 acres more or less.

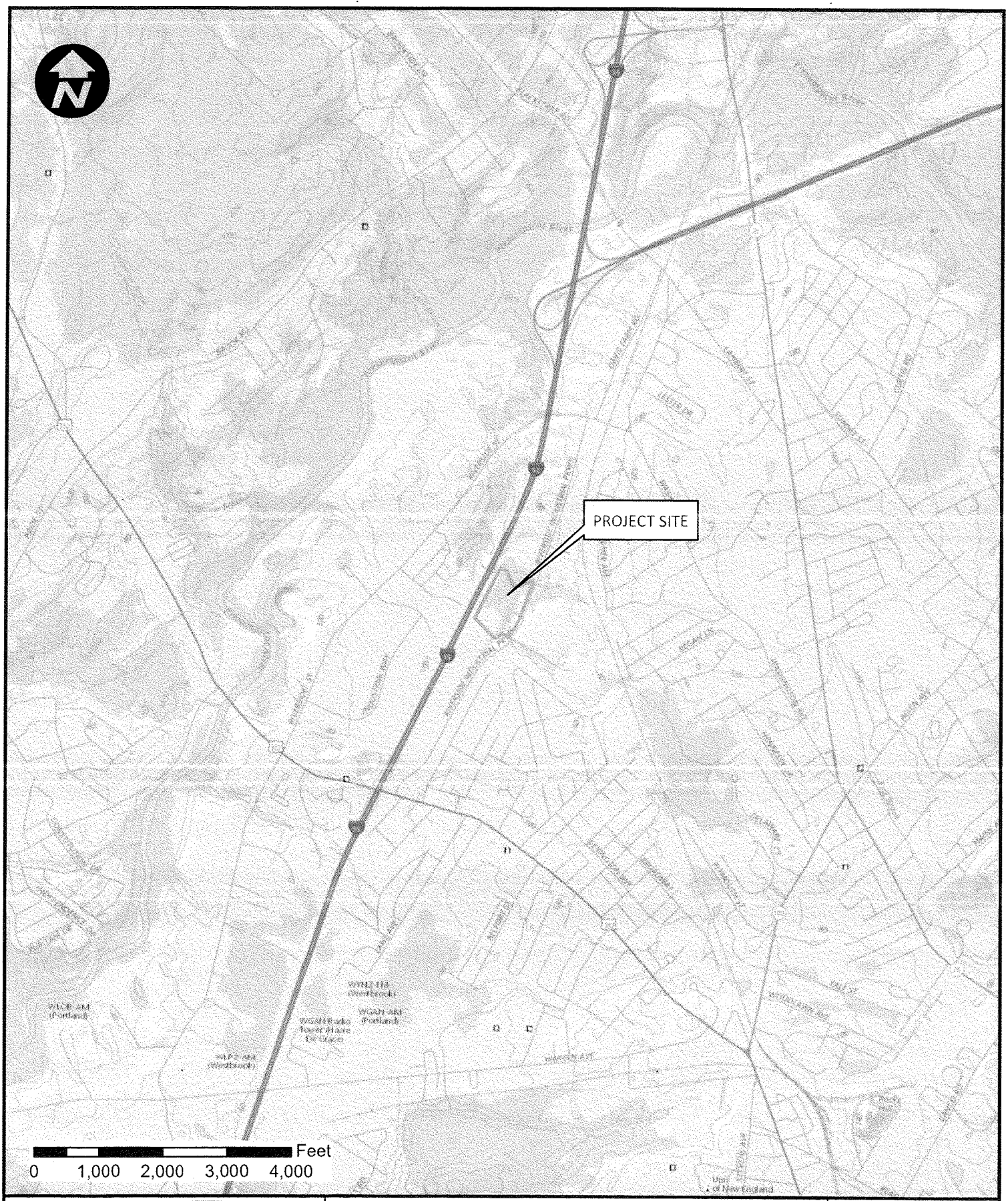
The basis of bearing for the above described parcel is Grid North. The above described parcel is partially shown as an abutting on a boundary survey prepared for R.M. Davis, Inc. c/o Arthur Borduas by Northeast Civil Solutions, Inc., dated August 26, 2009.

Being the same premises described in the deed to Grantor, dated December 28, 2012 and recorded in the Cumberland County Registry of Deeds, Book 30295, Page 118. Pursuant to a Certificate of

Received
Recorded Register of Deeds
Jan 15,2015 02:29:24P
Cumberland County
Nancy A. Lane

Section 2

USGS Site Location Map, Aerial Photo



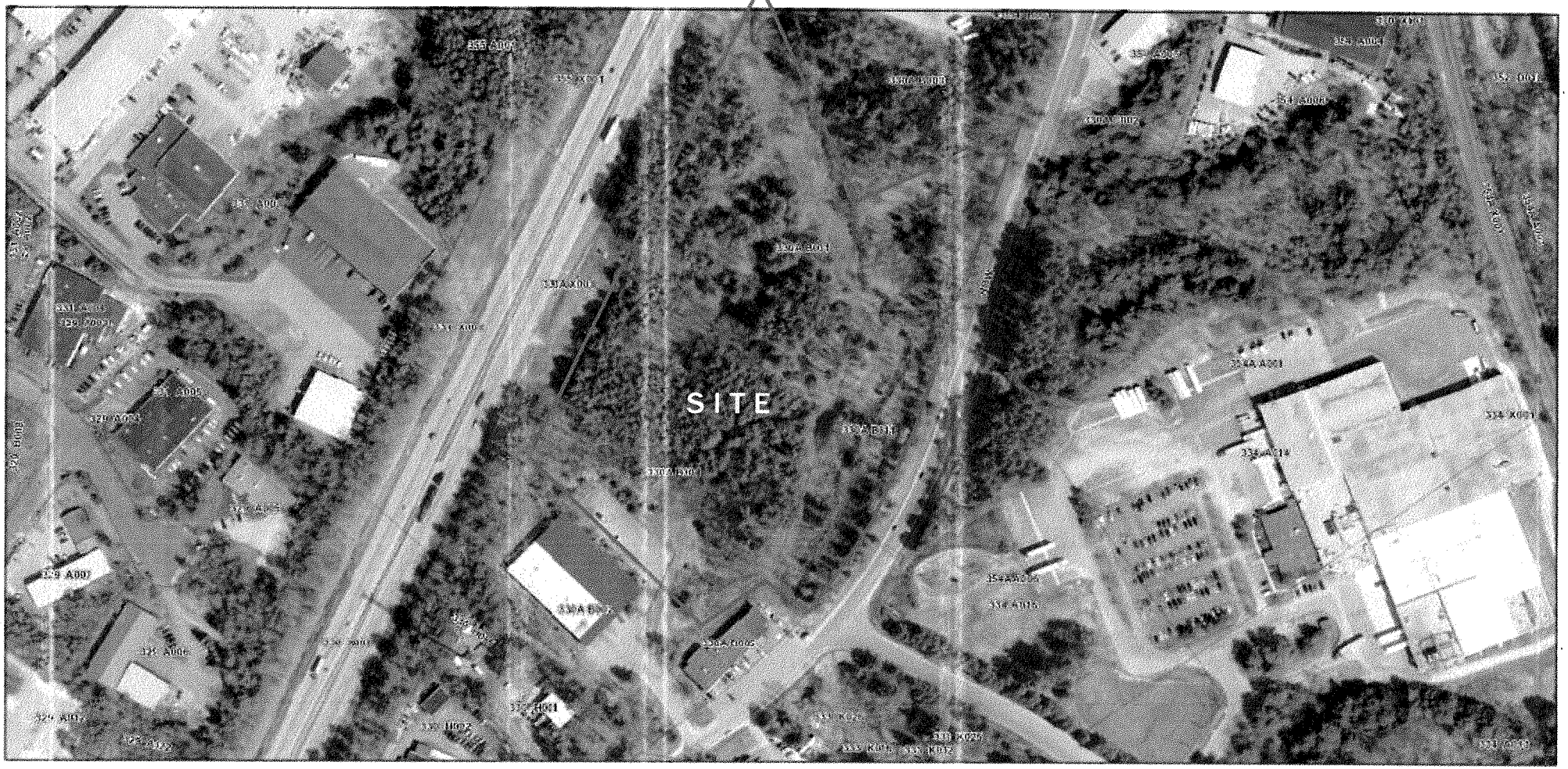
SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. - Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	SITE LOCATION MAP TWO EISENHOWER DRIVE, LLC	SCALE:	1 " = 2,000 '
		DATE:	06/20/2018
LOCATION:	250 Riverside Industrial Parkway Portland, ME 04103	INFORMATION:	USGS Quadrangle: Portland West

16360_LocationMap.mxd

PROJECT NUMBER: 16360



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Parcels

Portland_Photos_2015

1:2,178

0 140 280 560 ft

0 40 80 160 m

City of Portland, DPS

Two Eisenhower Drive LLC
250 Riverside Industrial Parkway
Portland, Maine

Web AppBuilder for ArcGIS
City of Portland, Maine

Section 3

Project Narrative

Exhibit 3: Project Description

The applicant proposes the construction of a new 11,200 square-foot ± (footprint) property services building, parking, and entry drive with stream crossing, exterior landscaping materials storage area, fleet and employee parking, stormwater management features and other associated site improvements on an undeveloped site at 250 Riverside Industrial Parkway in Portland. The portion of the project to be reviewed by this Maine DEP Natural Resources Protection Act Tier 1 application is for the proposed ~~6,550~~ 6,849.50 square foot freshwater wetland impact area. See **Exhibit 5** for a Statement of Avoidance and Minimization.

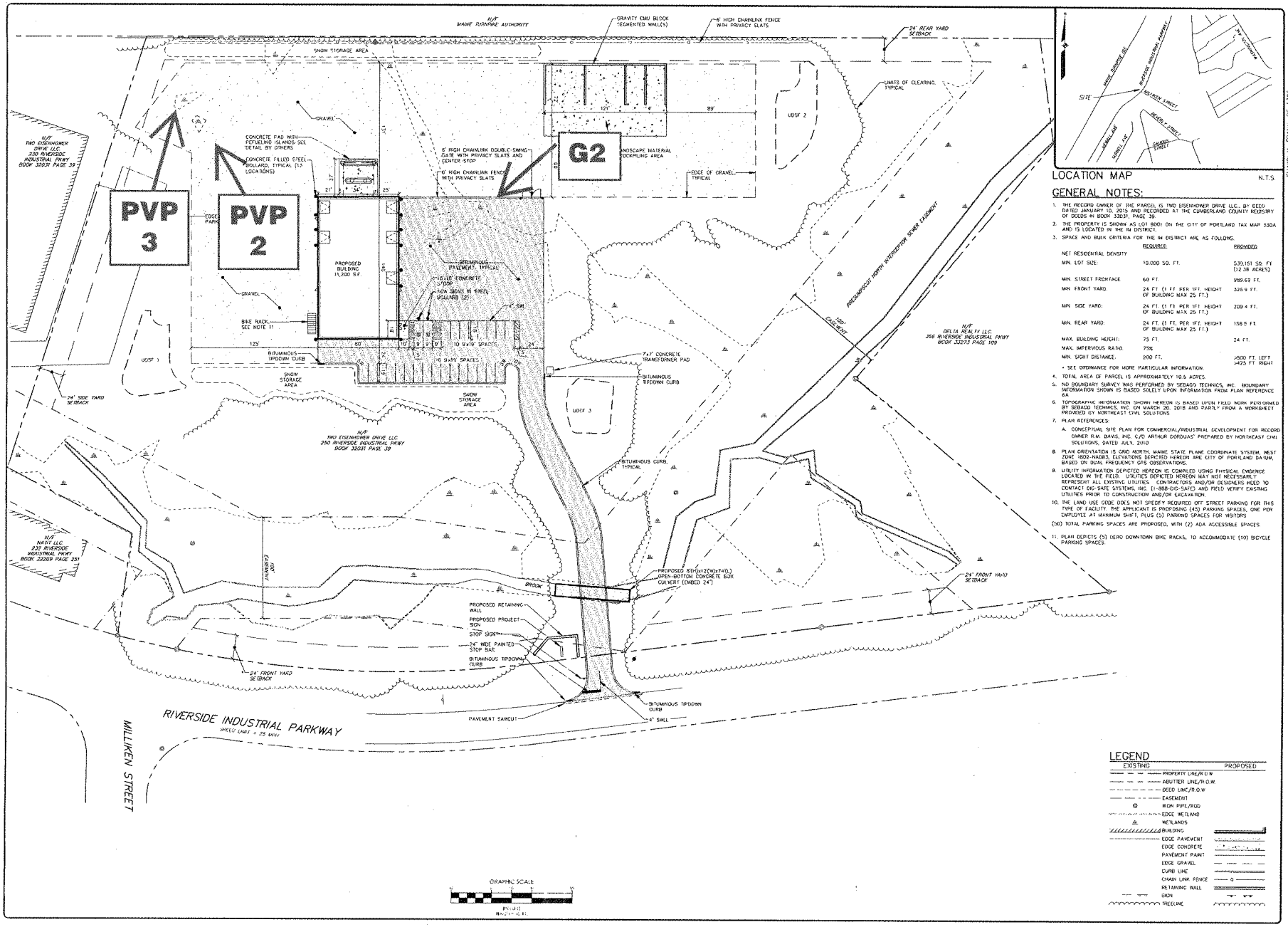
The proposed wetland impacts are limited to the locations shown on the site plans and the work will be performed in accordance with the design and notes shown on the enclosed 8.5x11 Sheet 3-Site, Sheet 5-Grading and Erosion Control and Sheet 7- Erosion Control Plan sheets included in this NRPA submittal.

TIMING - The project will commence upon receipt of all required approvals. The team anticipates an autumn 2018 project start with completion within eight months.

Applications have also been submitted under separate cover to MDEP for NRPA PBR review and to the Army Corps of Engineers (ACOE) for the stream crossing and freshwater wetland impact associated with the proposed site development. The City of Portland is reviewing a Site Location of Development/MCGP Application under the provisions of municipal delegated review.

Section 4

Photo Key & Existing Conditions Site Photographs



LOCATION MAP

N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS TWO EISENHOWER DRIVE LLC., BY DEED DATED JANUARY 10, 2015 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 32031, PAGE 39.
2. THE PROPERTY IS SHOWN AS LOT 8001 ON THE CITY OF PORTLAND TAX MAP 530A AND IS LOCATED IN THE IN DISTRICT.
3. SPACE AND BULK CRITERIA FOR THE IN DISTRICT ARE AS FOLLOWS:

	REQUIRED:	PROVIDED
NET RESIDENTIAL DENSITY		
MIN. LOT SIZE:	10,000 SQ. FT.	539,151 SQ. FT. (12.38 ACRES)
MIN. STREET FRONTAGE	60 FT.	989.62 FT.
MIN. FRONT YARD:	24 FT. (1 FT. PER 3FT. HEIGHT OF BUILDING MAX 25 FT.)	325.9 FT.
MIN. SIDE YARD:	24 FT. (1 FT. PER 3FT. HEIGHT OF BUILDING MAX 25 FT.)	209.4 FT.
MIN. REAR YARD:	24 FT. (1 FT. PER 3FT. HEIGHT OF BUILDING MAX 25 FT.)	158.5 FT.
MAX. BUILDING HEIGHT:	75 FT.	24 FT.
MAX. IMPERVIOUS RATIO	75%	
MIN. SIGHT DISTANCE.	200 FT.	>500 FT. LEFT, >425 FT. RIGHT

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 10.5 ACRES.
5. NO BOUNDARY SURVEY WAS PERFORMED BY SEBAGO TECHNICS, INC. BOUNDARY INFORMATION SHOWN IS BASED SOLELY UPON INFORMATION FROM PLAN REFERENCE 6A.
6. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. ON MARCH 20, 2018 AND PARTLY FROM A WORKSHEET PROVIDED BY NORTHEAST CIVIL SOLUTIONS.
7. PLAN REFERENCES:
   A. CONCEPTUAL SITE PLAN FOR COMMERCIAL/INDUSTRIAL DEVELOPMENT FOR RECORD OWNER R.M. DAVIS, INC. C/O ARTHUR DORDUAS" PREPARED BY NORTHEAST CIVIL SOLUTIONS, DATED JULY, 2010
8. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON ARE CITY OF PORTLAND DATUM, BASED ON DUAL FREQUENCY GPS OBSERVATIONS.
9. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
10. THE LAND USE CODE DOES NOT SPECIFY REQUIRED OFF STREET PARKING FOR THIS TYPE OF FACILITY. THE APPLICANT IS PROPOSING (45) PARKING SPACES, ONE PER EMPLOYEE AT MAXIMUM SHIFT, PLUS (5) PARKING SPACES FOR VISITORS (50) TOTAL PARKING SPACES ARE PROPOSED, WITH (2) ADA ACCESSIBLE SPACES.
11. PLAN DEPICTS (5) DERO DOWNTOWN BIKE RACKS, TO ACCOMMODATE (10) BICYCLE PARKING SPACES.

LEGEND

EXISTING	PROPOSED
	PROPERTY LINE/R.O.W.
	ABUTTER LINE/R.O.W.
	DEED LINE/R.O.W.
	EASEMENT
IRON PIPE/ROD	
EDGE WETLAND	
WETLANDS	
	BUILDING
	EDGE PAVEMENT
	EDGE CONCRETE
	PAVEMENT PAINT
	EDGE GRAVEL
	CURB LINE
	CHAIN LINK FENCE
	RETAINING WALL
	SIGN
	TREELINE

PROGRESS PRINT

STATE OF MAINE — SHAWN M. FRANIS — 10627 — REGISTERED PROFESSIONAL ENGINEER — 9/27/18

SHAWN M. FRANIS, PE #10627

DESIGNED	CHECKED
SAH	SMF

REV	BY:	DATE	STATUS
3	SMF	8-27-18	REVISED PER CITY COMMENTS
2	SMF	7-13-18	ISSUED TO CITY
1			

WHITE BLACK SHALL NOT BE WORKED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS MADE TO THIS DRAWING WITHOUT THE WRITTEN CONSENT OF SEBAGO TECHNICS, INC. WILL RENDER THE ENGINEER OF RECORD RELEASED FROM RESPONSIBILITY FOR THE DRAWING.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Road
Suite 4A
South Portland, ME 04106
(207) 200-2100

SITE PLAN
OF
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO	SCALE
19360	1" = 40'

SHEET 3 OF 12

19360 Site Plan.dwg

PHOTO KEY

PHOTO KEY



Exhibit 4: Existing Conditions Site Photographs


WP2


G2

Section 5

Statement of Avoidance and Minimization

Section 5: Statement of Avoidance and Minimization

The project has been sited to take advantage of the generally flat topography while maximizing development within the interior upland portion of the site. The design as presented has the smallest footprint that allows a functional facility based on the operational experience of the applicant and is limited to the least amount of wetland impact necessary ~~(6,550 sf)~~ 6,849.50 to complete the activity. Wetland impact cannot be avoided and construction of a smaller facility is not practicable when consideration is given to the logistics and cost of developing the site. Where feasible the fill sideslopes are designed at 2:1 in lieu of the 3:1 reducing impact area. Temporary and permanent erosion controls will be utilized throughout the project to prevent sedimentation of protected natural resources.

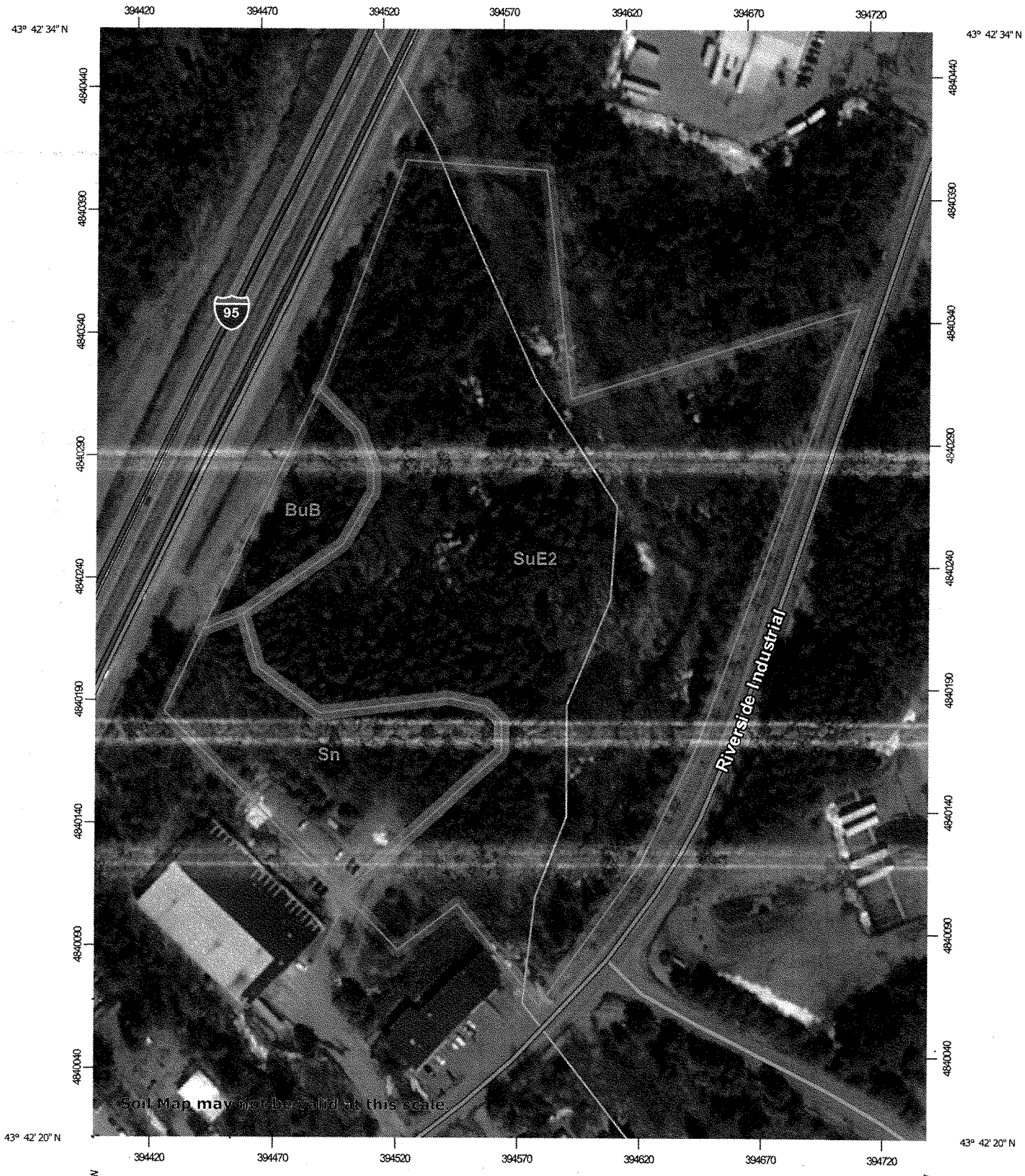
The development of the site will not have an unreasonable impact to resources and meets environmental standards by causing no unreasonable impacts to existing scenic areas, aesthetics, recreational uses, navigational uses and will not cause unreasonable erosion of soil or sediment, unreasonably harm any significant wildlife, fisheries or aquatic habitat, unreasonable interfere with natural flow of surface or subsurface waters, lower water quality or increase flooding.

Other activities on the site, a stream crossing is being reviewed under the provisions of a NRPA PBR submitted under separate cover.

Section 6

USDA Web Soil Survey

Soil Map—Cumberland County and Part of Oxford County, Maine
(Two Eisenhower Drive LLC)



Map Scale: 1:2,200 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 13, Sep 11, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

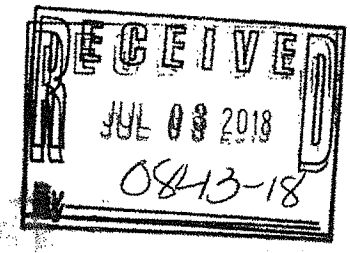
Map Unit Symbol	Map Unit Name
BuB	Lamoine silt loam, 3 to 8 percent slopes
Sn	Scantic silt loam, 0 to 3 percent slopes
SuE2	Suffield silt loam, 25 to 45 percent slopes, eroded

Section 7

Maine Historic Preservation

SEBAGO
TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE



16360
June 25, 2018

Mr. Kirk Mohney, State Historic Preservation Officer
Maine Historic Preservation Commission
State House Station 65
Augusta, Maine 04333

Re: 250 Riverside Industrial Parkway, Portland
Tax Parcels: 330A-B-1, 330A-B-4, 330A-B-11
Record Owner: Two Eisenhower Drive, LLC

Dear Mr. Mohney,

Sebago Technics, Inc. has been retained for services related to the construction of a new property maintenance services facility building at a wooded site located at 250 Riverside Industrial Parkway in the City of Portland. Site improvements include the construction of a new ±12,000 square foot two-story metal building, drive/parking and other associated site improvements. The site is located in a moderate impact industrial zone (IM) and consists of three tax parcels totaling ±12.4 acres bounded to the west by the Maine Turnpike (I-95) and to the east by Riverside Industrial Parkway.

The abutting and nearby properties include commercial buildings housing a NAPA Distribution Center Annex, Titan Mechanical, Maintenance Technology Co., etc. which are typical of, and consistent with, the industrial zoning along Riverside Industrial Parkway. No residential properties abut the site and there are no views to or from the project area from residential areas.

Sebago Technics is currently working on a regulatory permit applications for the proposed site development and we respectfully request a site review by the Commission for the presence of any archaeological or historic sites within or adjacent to the project area determined in accordance with the provisions of the National Historic Preservation Act 36 CFR, Part 800, Section 106.

We have enclosed a U.S.G.S. Topographic location map and aerial photograph from the City GIS for your reference. If you have any questions or require additional information please contact me at snichols@sebagotechnics.com or directly at (207) 200-2120.

Sincerely,

SEBAGO TECHNICS, INC.

Stefanie Nichols

Stefanie Nichols
Permitting Specialist/Project Coordinator

enc.

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohney

Kirk F. Mohney,
State Historic Preservation Officer
Maine Historic Preservation Commission

7/17/18
Date

75 John Roberts Road – Suite 4A, South Portland, ME 04106-6963 • 207-200-2100 • Fax: 207-856-2206

Section 8

Native American Tribe Inquiries and Responses

Stefanie Nichols

From: Sue Young <ogs1@maliseets.com>
Sent: Thursday, June 21, 2018 2:07 PM
To: Stefanie Nichols
Subject: RE: Site Review - 250 Riverside Industrial Parkway, Portland

Stefanie,

We do not have an immediate concern with your project or project site, and do not currently have the resources to fully investigate same. Should any human remains, archaelogical properties or other items of historical importance be unearthed while working on this project, we recommend that you stop your project and report your findings to the appropriate authorities including the Houlton Band of Maliseet Indians.

Thank you.

<><><><><><><><><><><>
Susan Young
Tribal Historic Preservation Officer
Natural Resources Director
Houlton Band of Maliseets
88 Bell Road
Littleton, ME 04730
207-532-4273 ext. 202
fax 207-532-6883

ogs1@maliseets.com

www.maliseets.com

From: Stefanie Nichols [mailto:snichols@sebagotechnics.com]
Sent: Thursday, June 21, 2018 1:40 PM
To: Sue Young
Subject: Site Review - 250 Riverside Industrial Parkway, Portland

Good afternoon Susan,

Please find a site review request and a site location map for the proposed development 250 Riverside Industrial Parkway in Portland.

Many thanks, Stefanie

Stefanie Nichols *Permitting Specialist/Project Coordinator*
Office: 207.200.2100 | Direct: 207.200.2120
75 John Roberts Rd., Suite 4A, South Portland, ME 04106
snichols@sebagotechnics.com | www.sebagotechnics.com

Tribal Historic Preservation Office

Passamaquoddy Tribe
PO Box 159 Princeton, Me. 04668
207-796-5533

Stefanie Nichols *Permitting Specialist/Project Coordinator*
Office: 207.200.2100 | Direct: 207.200.2120
75 John Roberts Rd., Suite 4A, South Portland, ME 0410

July 6, 2018

- Re: Portland – 250 Riverside Industrial Parkway

Dear Stefanie;

The Passamaquoddy THPO has reviewed the following application regarding the historic properties and significant religious and cultural properties in accordance with NHPA, NEPA, AIRFA, NAGPRA, ARPA, Executive Order 13007 Indian Sacred Sites, Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, and Executive Order 12898 Environmental Justice.

The above listed proposed project will not have any impact on cultural and historical concerns of the Passamaquoddy Tribe.

Sincerely;

Donald Soctomah
Soctomah@gmail.com
THPO
Passamaquoddy Tribe

PENOBSCOT NATION
CULTURAL & HISTORIC PRESERVATION
12 WABANAKI WAY, INDIAN ISLAND, ME 04468

CHRIS SOCKALEXIS – TRIBAL HISTORIC PRESERVATION OFFICER
E-MAIL: chris.sockalexis@penobscotnation.org

NAME	Stefanie Nichols
ADDRESS	Sebago Technics 75 John Roberts Road, Suite 4A South Portland, ME 04106-6963
OWNER'S NAME	Two Eisenhower Drive, LLC
TELEPHONE	(207) 200-2100
FAX	
EMAIL	snichols@sebagotechnics.com
PROJECT NAME	Construction of a metal two-story property maintenance services building and other site improvements at 250 Riverside Industrial Parkway
PROJECT SITE	Portland, ME
DATE OF REQUEST	June 21, 2018
DATE REVIEWED	July 10, 2018

Thank you for the opportunity to comment on the above refcrenced project. This project appcars to have no impact on a structure or site of historic, architectural or archaeological significance to the Penobscot Nation as defined by the National Historic Preservation Act of 1966, as amended.

If Native American cultural materials are cncountered during the course of the project, please contact my office at (207) 817-7471. Thank you for consulting with the Penobscot Nation Tribal Historic Preservation Office with this project.

Chris Sockalexis, THPO
Penobscot Nation

SEBAGO
TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Transmittal

16360

To: Ms. Jennifer Pictou, THPO
Aroostook Band of Micmacs
jpictou@micmac-nsn.gov

From: Stefanie Nichols
Permitting Specialist/Project Coordinator

Date: June 21, 2018

Subject: 250 Riverside Industrial Parkway, Portland

Record Owner: Two Eisenhower Drive, LLC

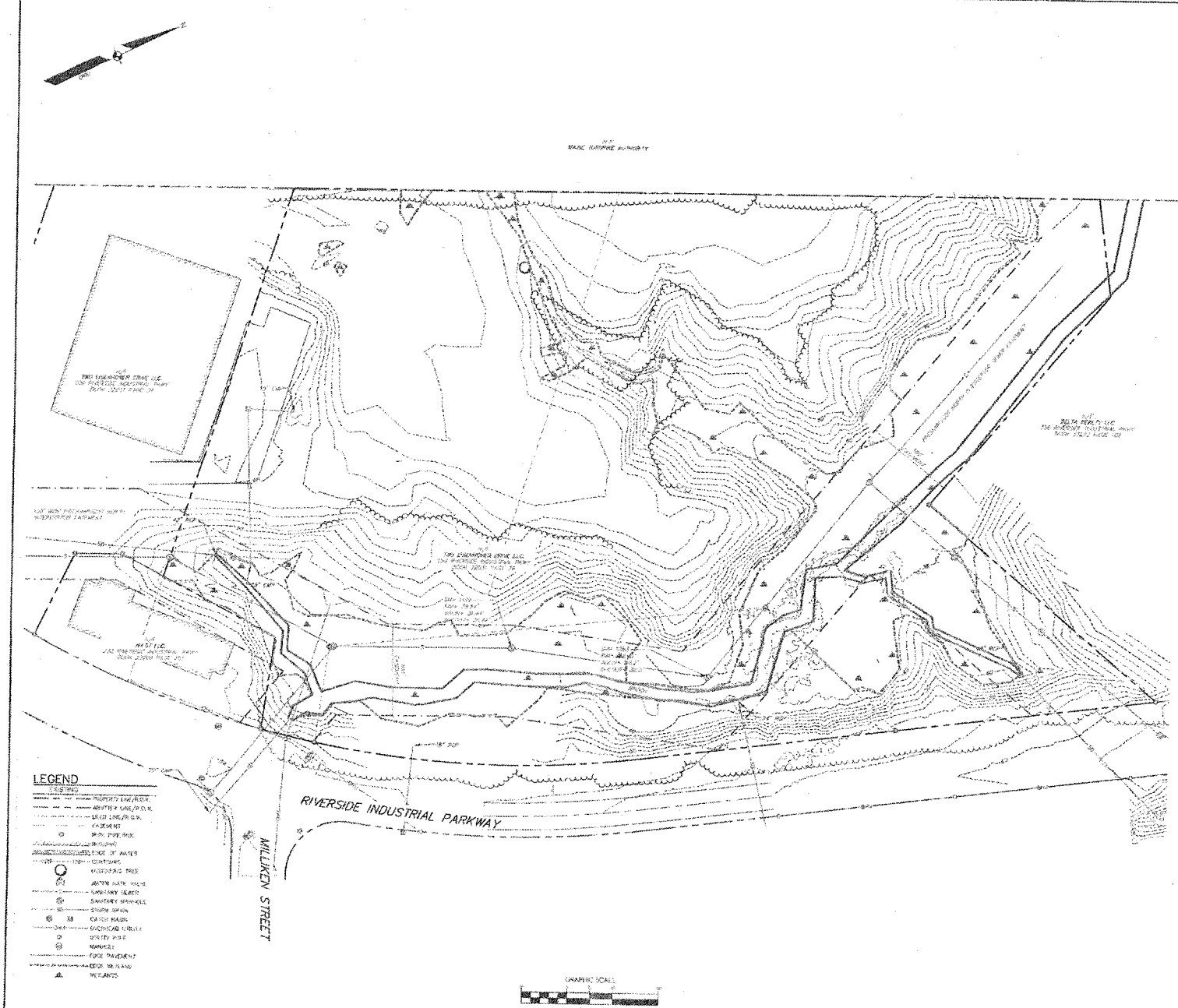
Sebago Technics will submit Maine DEP NRPA and Army Corps of Engineers permit applications for the development of an unimproved 12.4± acre site located at 250 Riverside Industrial Parkway in the City of Portland. The site improvements include construction of a new metal two-story property maintenance services building and other associated site improvements.

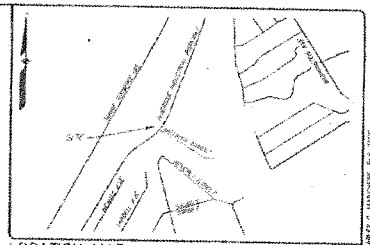
We respectfully request that you review available resources for the presence of any structures or sites of historic, architectural or archaeological significance to the Aroostook Band of Micmacs as defined by the amended National Historic Preservation Act of 1966. Should you have any questions, or if you need additional information please do not hesitate to contact me. Thank you in advance for your assistance.

enc. Site Location Map

Section 9

8 ½" x 11" Plans





LOCATION MAP N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS TWO EISENHOWER DRIVE, LLC., BY DEED DATED JANUARY 31, 2013 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 30014, PAGE 36.
2. THE PROPERTY IS SHOWN AS LOT 1B001 ON THE CITY OF PORTLAND TAX MAP 410A AND IS LOCATED IN THE IM DISTRICT.
3. SPACE AND BULK CRITERIA FOR THE IM DISTRICT ARE AS FOLLOWS:

MINIMUM LOT SIZE:	10,000 SQ. FT.
MINIMUM STREET FRONTAGE:	100 FT.
MINIMUM FRONT YARD:	1 FT. PER FT. HEIGHT OF BUILDING (MAX 25 FT.)
MINIMUM SIDE YARD:	1 FT. PER FT. HEIGHT OF BUILDING (MAX 25 FT.)
MINIMUM REAR YARD:	1 FT. PER FT. HEIGHT OF BUILDING (MAX 25 FT.)
MAXIMUM BUILDING HEIGHT:	90 FT.
MAXIMUM IMPERVIOUS RATIO:	75%

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 12.4 ACRES.
5. NO INDEPENDENT BOUNDARY RETRACEMENT SURVEY WAS PERFORMED BY SEBAGO TECHNICS, INC. BOUNDARY INFORMATION SHOWN IS BASED SOLELY UPON INFORMATION FROM AN REFERENCE (7A).
6. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. ON MARCH 22, 2018 AND IN PART FROM A HYDROGRAPHIC SURVEY BY NORTHEAST CIVIL SOLUTIONS.
7. PLAN REFERENCES:
   A. CONDITIONAL SITE PLAN FOR COMMERCIAL/INDUSTRIAL DEVELOPMENT FOR RECORD DRIVER, P.A., DATED NO. 6251 REVISED (ENGAGE) PREPARED BY NORTHEAST CIVIL SOLUTIONS, DATED JULY, 2013.
8. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE (1802 NAD83, 2011) AS DERIVED FROM GPS OBSERVATIONS. ELEVATIONS ARE REFERENCED TO NAVD88 (GEOID 12A) AND WERE DERIVED FROM GPS OBSERVATIONS. THE CITY OF PORTLAND BENCH MARK #28 WITH A PUBLISHED ELEVATION OF 103.69 FEET BASED ON U.S. ARMY CORPS OF ENGINEERS CORPSCON 6.0.1 SOFTWARE WAS USED FOR THIS SURVEY.
9. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD, UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. TO MARK OUT SITE AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
10. WETLAND INFORMATION DEPICTED HEREON WAS TAKEN FROM PLAN REFERENCE 7A. THE WETLANDS ON THIS SITE WERE DELINEATED ON JULY 25, 2018 BY GARY M. FULLERTON, CSS OF SEBAGO TECHNICS, INC. SAID DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND THE NORTHCENTRAL REGIONAL SUPPLEMENT REFERENCED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. ALL WETLAND FLAGS WERE LOCATED USING A GPS DATA-GRADE UNIT CAPABLE OF SUBMETER ACCURACY.

LEGEND

- PROPERTY LINE/R.O.W.
- ABUTTER LINE/R.O.W.
- LEASE LINE/R.O.W.
- EASEMENT
- IRON PIPE/RODE
- BUILDING
- EDGE OF WATER
- CONTOURS
- EXISTING TREE
- WATER SERVICE
- SANITARY SEWER
- SANITARY MANHOLE
- STORM SEWER
- CATCH BASIN
- OVERHEAD UTILITY
- UTILITY POLE
- MARKERS
- EDGE PAVEMENT
- EDGE OF PLANS
- WETLANDS

SURVEYOR'S STATEMENT

THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT WAS DONE IN ACCORDANCE WITH CHAPTER 90, PART 1 (PROFESSIONAL STANDARDS OF PRACTICE) AND PART 2 (TECHNICAL STANDARDS OF PRACTICE) OF THE RULES ADOPTED BY THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS.

CHARLES D. MINSHEW, P.E. 20538

JULY 17, 2018

CHARLES D. MINSHEW, P.E. 20538

DRAWN	CHECKED
MAC/TB W	CDM

C	CDM	7-25-18	REVISED WETLAND UPDATE & ENGR NOTE 9
B	CDM	7-13-18	ISSUED TO DOT
A	CDM	3-28-18	ISSUED FOR JOINT REVIEW
REVISED	BY	DATE	

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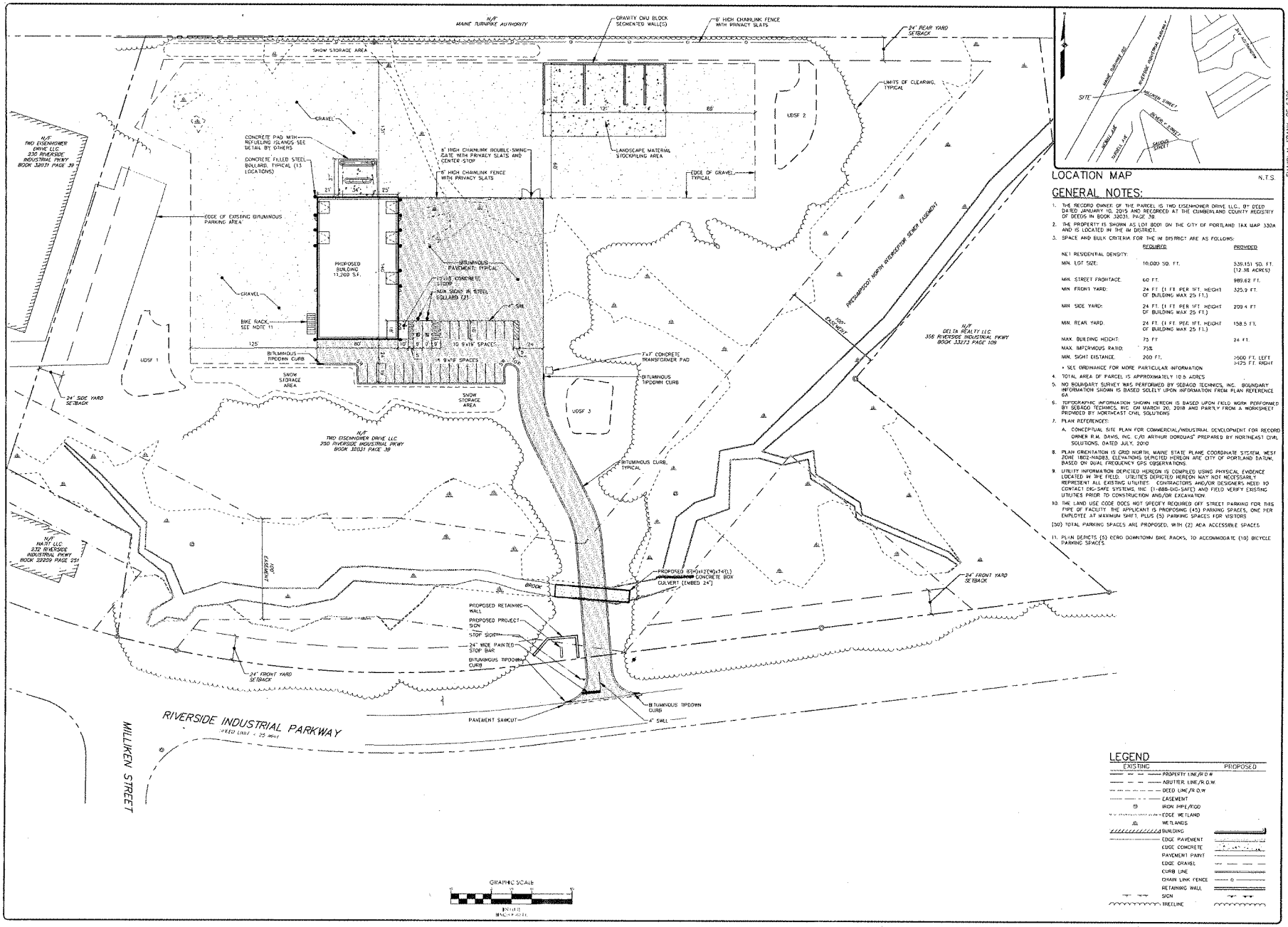
SEBAGO TECHNICS
ONE SEBAGO TECHNICS WAY
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100
Fax: 207-200-2099

EXISTING CONDITIONS PLAN
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE

FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1700
PORTSMOUTH, NEW HAMPSHIRE 03802

PROJECT NO.	SCALE
16360	1" = 80'

SHEET 2 OF 12



LOCATION MAP N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS TWO EISENHOWER DRIVE, LLC., BY DEED DATED JANUARY 10, 2019 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 32031, PAGE 39.
2. THE PROPERTY IS SHOWN AS LOT 8001 ON THE CITY OF PORTLAND TAX MAP 330A AND IS LOCATED IN THE IM DISTRICT.
3. SPACE AND BULK CRITERIA FOR THE IM DISTRICT ARE AS FOLLOWS:

	REQUIRED	PROVIDED
NET RESIDENTIAL DENSITY:		
MIN. LOT SIZE:	10,000 SQ. FT.	535,151 SQ. FT. (12.38 ACRES)
MIN. STREET FRONTAGE:	60 FT.	989.62 FT.
MIN. FRONT YARD:	24 FT. (1 FT PER 1FT. HEIGHT OF BUILDING MAX 25 FT.)	325.9 FT.
MIN. SIDE YARD:	24 FT. (1 FT. PER 1FT. HEIGHT OF BUILDING MAX 25 FT.)	209.4 FT
MIN. REAR YARD:	24 FT. (1 FT. PER 1FT. HEIGHT OF BUILDING MAX 25 FT.)	158.5 FT.
MAX. BUILDING HEIGHT:	75 FT.	24 FT.
MAX. IMPERVIOUS RATIO:	75%	
MIN. SIGHT DISTANCE:	200 FT.	>500 FT. LEFT, >475 FT. RIGHT

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 10.5 ACRES
5. NO BOUNDARY SURVEY WAS PERFORMED BY SEBAGO TECHNICS, INC. BOUNDARY INFORMATION SHOWN IS BASED SOLELY UPON INFORMATION FROM PLAN REFERENCE 6A
6. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC ON MARCH 20, 2018 AND PARTLY FROM A WORKSHEET PROVIDED BY NORTHEAST CIVIL SOLUTIONS
7. PLAN REFERENCES:
   A. CONCEPTUAL SITE PLAN FOR COMMERCIAL/INDUSTRIAL DEVELOPMENT FOR RECORD OWNER R.M. DAVIS, INC C/O ARTHUR DORDUAS" PREPARED BY NORTHEAST CIVIL SOLUTIONS, DATED JULY, 2010
8. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE (1802-NAD83). ELEVATIONS DEPICTED HEREON ARE CITY OF PORTLAND DATUM, BASED ON DUAL FREQUENCY GPS OBSERVATIONS
9. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
10. THE LAND USE CODE DOES NOT SPECIFY REQUIRED OFF STREET PARKING FOR THIS TYPE OF FACILITY. THE APPLICANT IS PROPOSING (45) PARKING SPACES, ONE PER EMPLOYEE AT MAXIMUM SHIFT, PLUS (5) PARKING SPACES FOR VISITORS

(50) TOTAL PARKING SPACES ARE PROPOSED, WITH (2) ADA ACCESSIBLE SPACES.

11. PLAN DEPICTS (5) DERO DOWNTOWN BIKE RACKS, TO ACCOMMODATE (10) BICYCLE PARKING SPACES.

LEGEND

EXISTING	PROPOSED
	PROPERTY LINE/R.O.W.
	ABUTTER LINE/R.O.W.
	DEED LINE/R.O.W.
	EASEMENT
⊙	IRON PIPE/RIGID
	EDGE WETLAND
	WETLANDS
	BUILDING
	EDGE PAVEMENT
	EDGE CONCRETE
	PAVEMENT PAINT
	EDGE GRAVEL
	CURB LINE
	CHAIN LINK FENCE
	RETAINING WALL
	SIGN
	TREELINE

PROGRESS PRINT

STATE OF MAINE — SHAWN M. FRANK — No. 8396 — REGISTERED PROFESSIONAL ENGINEER — 8/27/19

SHAWN M. FRANK, PE 8396

DESIGNED	CHECKED
SAH	SMF

REV.	BY:	DATE:	STATUS:
1	SMF	8-27-19	REVISED PER CITY COMMENTS
4	SMF	7-23-18	ISSUED TO CITY

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. AND ANY ALTERATIONS OR MODIFICATIONS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

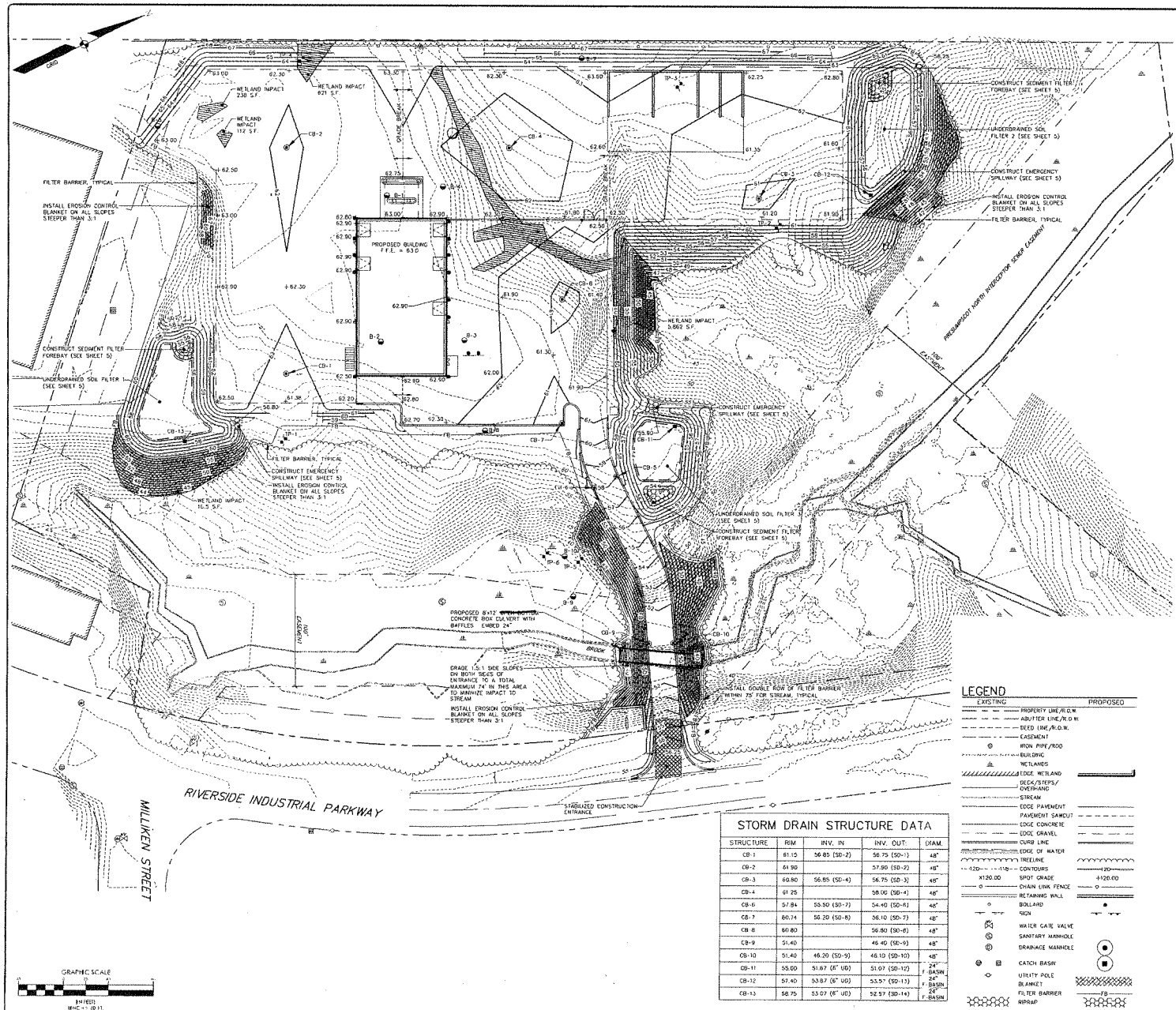
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd
Suite B
South Portland, ME 04106
Tel: 207-200-2100

SITE PLAN
250 RIVERSIDE INDUSTRIAL PARKWAY
AT RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR:
TWO EISENHOWER DRIVE, LLC
C/O DON TAO
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO	SCALE
16360	1" = 40'

SHEET 3 OF 12

USGS Survey Mk 5



CONSTRUCTION NOTES

1. ALL WORK SHALL CONFORM TO THE APPLICABLE CODES AND ORDINANCES.
2. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIM OR HERSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIM OR HERSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND IN THE FIELD.
4. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND OWNER'S REQUIREMENTS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
5. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
6. CONTRACTOR SHALL CLEAN AND REMOVE DEBRIS AND SEDIMENT DEPOSITED ON PUBLIC STREETS, SIDEWALKS, ADJACENT AREAS, OR OTHER PUBLIC WAYS DUE TO CONSTRUCTION.
7. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION AND AS DIRECTED BY DESIGN DRAWINGS.
8. SITE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.
9. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" PUBLISHED BY THE BUREAU OF LAND AND WATER QUALITY OF THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2003 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
10. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN HEREON ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY UTILITY COMPANIES. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (811) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.
11. CONTRACTOR SHALL BE AWARE THAT DIG SAFE ONLY NOTIFIES ITS "MEMBER" UTILITIES ABOUT THE DIG WHEN NOTIFIED. DIG SAFE WILL ADVISE CONTRACTOR OF MEMBER UTILITIES IN THE AREA. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND CONTACTING NON-MEMBER UTILITIES DIRECTLY. NON-MEMBER UTILITIES MAY INCLUDE TOWN OR CITY WATER AND SEWER DISTRICTS AND SMALL LOCAL UTILITIES, AS WELL AS USG PUBLIC WORKS SYSTEMS.
12. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 1365-A. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITIES TO OBTAIN AUTHORIZATION PRIOR TO RELOCATION OF ANY EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS. IF A UTILITY CONFLICT ARISES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER, THE MUNICIPALITY AND APPROPRIATE UTILITY COMPANY PRIOR TO PROCEEDING WITH ANY RELOCATION.
13. ALL PAVEMENT MARKINGS AND DIRECTIONAL SIGNAGE SHOWN ON THE PLAN SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.
14. ALL PAVEMENT JOINTS SHALL BE SAWCUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
15. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.
16. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL REQUIRE A M.D.O.T. PERMIT AS WELL AS PERMITS FROM THE MUNICIPALITY AS APPLICABLE.
17. THE PROPOSED LIMITS OF CLEARING SHOWN HEREON ARE APPROXIMATE BASED UPON THE PROPOSED LIMITS OF SITE GRADING. THE APPLICANT RESERVES THE RIGHT TO PERFORM NORMAL FOREST MANAGEMENT ACTIVITIES OUTSIDE OF THE CLEARING LIMITS AS SHOWN. TREE REMOVAL OUTSIDE OF THE LIMITS OF CLEARING MAY BE NECESSARY TO REMOVE DEAD OR DYING TREES OR TREE LIMBS. TREE REMOVAL IS DUE TO POTENTIAL SAFETY HAZARDS AND TO PROMOTE PROPER FOREST GROWTH.
18. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND AS SPECIFIED ON PLANS.
19. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR THE REMOVAL, REPLACEMENT AND RECTIFICATION OF ALL DAMAGED AND DEFECTIVE MATERIAL AND WORKMANSHIP IN CONNECTION WITH THE CONTRACT WORK. THE CONTRACTOR SHALL REPLACE OR REPAIR AS DIRECTED BY THE OWNER ALL SUCH DAMAGED OR DEFECTIVE MATERIALS WHICH APPEAR WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
20. ALL WORK PERFORMED BY THE GENERAL CONTRACTOR AND/OR TRADE SUBCONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF LOCAL, STATE OR FEDERAL LAWS, AS WELL AS ANY OTHER GOVERNING REQUIREMENTS, WHETHER OR NOT SPECIFIED ON THE DRAWINGS.
21. WHERE THE TERMS "APPROVED EQUAL", "OTHER APPROVED", "EQUAL TO", "ACCEPTABLE" OR OTHER GENERAL QUALIFYING TERMS ARE USED IN THESE NOTES, IT SHALL BE UNDERSTOOD THAT REFERENCE IS MADE TO THE RULING AND JUDGMENT OF SEBAGO TECHNICS, INC.
22. THE GENERAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION FOR THE WORK UNTIL TURNED OVER TO THE OWNER.
23. THE GENERAL CONTRACTOR SHALL MAINTAIN A CURRENT AND COMPLETE SET OF CONSTRUCTION DRAWINGS ON SITE DURING ALL PHASES OF CONSTRUCTION FOR USE OF ALL TRADES.
24. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.
25. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. ANY MODIFICATION TO SUIT FIELD DIMENSION AND CONDITION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY WORK.
26. BEFORE THE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND MATERIALS, REPAIR OR REPLACE PRIVATE OR PUBLIC PROPERTY WHICH MAY HAVE BEEN DAMAGED OR DESTROYED DURING CONSTRUCTION. CLEAN THE AREAS WITHIN AND ADJACENT TO THE PROJECT WHICH HAVE BEEN OBSTRUCTED BY HIS/HER OPERATIONS, AND LEAVE THE PROJECT AREA NEAT AND PRESENTABLE.
27. ALL SUBSURFACE UTILITY LINES SHOWN HEREON ARE BASED SOLELY ON THE FIELD LOCATION OF VISIBLE STRUCTURES, SUCH AS, CBS, HYDRANTS, ETC., IN CONJUNCTION WITH DESIGN AND OR AS-BUILT PLANS SUPPLIED TO SEBAGO TECHNICS INC. BY OTHERS PRIOR TO ANY CONSTRUCTION, EXCAVATION, TEST BORINGS, DRILLING, ETC. DIG SAFE MUST BE NOTIFIED AND A SITE IDENTIFICATION NUMBER ALONG WITH A SAFE TO DIG DATE OBTAINED. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING THE LOCATION, DEPTH AND MATERIAL OF ALL SUBSURFACE UTILITY LINES SHOWN HEREON AND ANY AND ALL OTHERS LOCATED ON SITE WITHIN THE CONSTRUCTION AREA.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT	DIAM.
CB-1	61.15	56.85 (SD-2)	56.75 (SD-1)	48"
CB-2	64.90		57.90 (SD-2)	48"
CB-3	60.80	56.85 (SD-4)	56.75 (SD-3)	48"
CB-4	61.25		58.00 (SD-4)	48"
CB-5	57.84	55.50 (SD-7)	54.40 (SD-5)	48"
CB-7	60.74	56.20 (SD-8)	56.10 (SD-7)	48"
CB-8	60.80		56.80 (SD-8)	48"
CB-9	51.40		46.40 (SD-9)	48"
CB-10	51.40	46.20 (SD-9)	46.10 (SD-10)	48"
CB-11	55.00	51.87 (8" UD)	51.07 (SD-12)	24" F-BASIN
CB-12	57.40	53.87 (8" UD)	53.57 (SD-13)	24" F-BASIN
CB-13	58.75	53.07 (8" UD)	52.57 (SD-14)	24" F-BASIN

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER LINE/R.O.W.	
DEED LINE/R.O.W.	
EASEMENT	
IRON PIPE/ROD	
BUILDING	
WETLANDS	
EDGE WETLAND	
DECK/STEPS/ OVERHANG	
STREAM	
EDGE PAVEMENT	
PAVEMENT SAWCUT	
EDGE CONCRETE	
EDGE GRAVEL	
CURB LINE	
EDGE OF WATER	
TREELINE	
120 CONTOURS	120
X120.00 SPOT GRADE	+120.00
CHAIN LINK FENCE	
RETAINING WALL	
BOLLARD	
SIGN	
WATER GATE VALVE	
SANITARY MANHOLE	
DRAINAGE MANHOLE	
CATCH BASIN	
UTILITY POLE	
BLANKET	
FILTER BARRIER	FB
RIPRAP	

PROGRESS PRINT

SHAWN M. FRANK, PE 13516
STATE OF MAINE
SHAWN M. FRANK
No. 13516
REGISTERED PROFESSIONAL ENGINEER
9/21/18

DESIGNED	CHECKED
SAH	SMF

REV	BY	DATE	STATUS
A	SMF	7-13-18	ISSUED TO CITY
B	SMF	8-21-18	REVISED PER CITY COMMENTS
C	SMF	8-27-18	REVISED WETLAND IMPACT AREA

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS MADE TO THIS PLAN SHALL BE AT THE USER'S RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd
South Portland, ME 04106
Tel: 207.200.2100

GRADING AND EROSION CONTROL PLAN
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR
TWO EISENHOWER DRIVE, LLC
100 COMMERCIAL STREET
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 40'

SHEET 5 OF 12

16360 GPrj 18.0

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING INTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.

PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROWS. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND ANY DATES SHOWING THE DATE OF DISTURBANCE AND COMPLETION OF THE AREA. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

DURING CONSTRUCTION

1. INSPECTION AND CORRECTIVE ACTION:
   INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.

2. MAINTENANCE:
   IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPS OR SIGNIFICANT REPAIR OF BMPS ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

3. DOCUMENTATION:
   KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATIONS WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP REPAIR REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN.

   THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

POST-CONSTRUCTION

1. PLAN:
   CARRY OUT AN APPROVED INSPECTION AND MAINTENANCE PLAN THAT IS CONSISTENT WITH THE MINIMUM REQUIREMENTS OF THIS SECTION. THE PLAN MUST ADDRESS INSPECTION AND MAINTENANCE OF THE PROJECT'S PERMANENT EROSION CONTROL MEASURES AND STORMWATER MANAGEMENT SYSTEM. THIS PLAN MAY BE COMBINED WITH THE PLAN LISTED IN SECTION 2(A) OF THIS APPENDIX. SEE SECTION 7(C)(2) FOR SUBMISSION REQUIREMENTS.

2. INSPECTION AND MAINTENANCE:
   ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS. THE FOLLOWING AREAS, FACILITIES, AND MEASURES MUST BE INSPECTED AND IDENTIFIED DEFICIENCIES MUST BE CORRECTED. AREAS, FACILITIES, AND MEASURES OTHER THAN THOSE LISTED BELOW MAY ALSO REQUIRE INSPECTION ON A SPECIFIC SITE. INSPECTION OR MAINTENANCE TASKS OTHER THAN THOSE DISCUSSED BELOW MUST BE INCLUDED IN THE MAINTENANCE PLAN DEVELOPED FOR A SPECIFIC SITE.

3. REGULAR MAINTENANCE:
   CLEAR ACCUMULATIONS OF WINTER SAND IN PARKING LOTS AND ALONG ROADWAYS AT LEAST ONCE A YEAR, PREFERABLY IN THE SPRING. ACCUMULATIONS ON PAVEMENT MAY BE REMOVED BY PAVEMENT SWEEPING. ACCUMULATIONS OF SAND ALONG ROAD SHOULDERS MAY BE REMOVED BY GRADING SAND INTO THE ROADWAY AND REMOVING IT ANNUALLY OR BY USING A FRONT-END LOADER. GRADING OF GRAVEL ROADS, OR GRADING OF THE GRAVEL SHOULDERS OF GRAVEL OR PAVED ROADS, MUST BE ROUTINELY PERFORMED TO ENSURE THAT STORMWATER DRAINS IMMEDIATELY OFF THE ROAD SURFACE TO ADJACENT BUFFER AREAS OR PARALLEL DITCHES, AND IS NOT IMPEDED BY ACCUMULATIONS OF GRADED MATERIAL ON THE ROAD SHOULDER OR BY EXCAVATION OF FALSE DITCHES IN THE SHOULDER. IF WATER BARS OR WATER TOP CUTWAYS ARE USED TO DIVERT RUNOFF FROM ROAD SURFACES, CLEAN-OUT ANY SEDIMENTS WITHIN OR AT THE OUTLET OF THESE STRUCTURES TO RESTORE THEIR FUNCTION.

4. DOCUMENTATION:
   KEEP A LOG (REPORT) SUMMARIZING INSPECTIONS, MAINTENANCE, AND ANY CORRECTIVE ACTIONS TAKEN. THE LOG MUST INCLUDE THE DATE ON WHICH EACH INSPECTION OR MAINTENANCE TASK WAS PERFORMED, A DESCRIPTION OF THE INSPECTION FINDINGS OR MAINTENANCE COMPLETED, AND THE NAME OF THE INSPECTOR OR MAINTENANCE PERSONNEL PERFORMING THE TASK. IF A MAINTENANCE TASK REQUIRES THE CLEAN-OUT OF ANY SEDIMENTS OR DEBRIS, INDICATE WHERE THE SEDIMENT AND DEBRIS WAS DISPOSED AFTER REMOVAL. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY PROVIDED TO THE DEPARTMENT UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST FIVE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

EROSION CONTROL APPLICATIONS & MEASURES

THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED WITHIN THE CURRENT MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION CHAPTER 500 RULES. THE DEPARTMENTS BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET. EROSION CONTROL MEASURES SHALL BE IN PLACE BEFORE THE ACTIVITY BEGINS, MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED. ADEQUATE AND TIMELY TEMPORARY AND PERMANENT STABILIZATION MEASURES MUST BE TAKEN.

1. POLLUTION PREVENTION:
   WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREA TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREA TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 48 HOURS.

2. TEMPORARY MULCHING:
   ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 7 DAYS SHALL BE MULCHED. ALSO, AREAS WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION BLANKETS ARE RECOMMENDED TO BE USED IN THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 15%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 8% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR. THE FOLLOWING INDICATES TYPES OF MULCH.
   HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).
   EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 IS 3 INCHES PLUS 1/2 INCH PER 20 FEET PROPERTY LINE OR WATERCOURSE. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.
   EROSION CONTROL BLANKETS: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

3. SOIL STOCKPILES:
   STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

4. NATURAL RESOURCES PROTECTION:
   ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE STABILIZED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1 OF THIS SECTION) OR OTHER NON-ERODIBLE COVER WITHIN 48 HOURS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4 OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM ANY RESOURCE. IF DISTURBANCE TAKES PLACE LESS THAN 30 FEET FROM A PROTECTED RESOURCE AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TO THE RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED.

5. SEDIMENT BARRIERS:
   PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF DISTURBANCE OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 80%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

   SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE LENGTH OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

   HAY BALES: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

   EROSION CONTROL MIX: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

   CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD-GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

6. TEMPORARY CHECK DAMS:
   SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 85%-90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: WE DO NOT RECOMMEND THE USE OF HAY BALES AS CHECK DAMS.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

1. STORMDRAIN INLET PROTECTION:
   INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLETOR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. STABILIZED CONSTRUCTION EXIT:
   PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.

3. DUST CONTROL:
   DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE.

4. TEMPORARY VEGETATION:
   TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONSIDERED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

5. PERMANENT VEGETATION:
   REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE IMPROVEMENTS SHALL BE COMPLETED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:

A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS /1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS /1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:

A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDEP SEED MIX 2 IS DISPLAYED)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	0.45 LBS/1,000 S.F. (20 LBS/ACRE)
REDTOP	0.05 LBS/1,000 S.F. (2 LBS/ACRE)
TALL FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
TOTAL:	0.97 LBS/1,000 S.F. (42 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND NEW MIXTURES. MDEP RECOMMENDED SEED MIX URES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER.

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:

FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST POINT. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR. REFER TO THE EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION:

WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOWING AND SEDIMENTS FROM REACHING A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES: - THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 2:1 (50%) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER:

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1, THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX AS DESCRIBED IN ITEM 2(C) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.

B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY NOVEMBER 15. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).

C. STABILIZE THE SLOPE WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF EROSION CONTROL MIX ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. DO NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 1H:1V OR MAKING GROUNDWATER SEEPS ON THE SLOPE FACE.

D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS: - BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN ONE. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER:

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD.

B. STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

D. STABILIZE THE SOIL WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A MINIMUM TWO-INCH LAYER OF EROSION CONTROL MIX ON THE SOIL BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE.

CONSTRUCTION SCHEDULE:

SITE IMPROVEMENTS WILL MOST LIKELY BEGIN IN _____ DEPENDING UPON FINAL PROJECT APPROVAL. THE FOLLOWING SCHEDULE IS ANTICIPATED.

1.	ESTIMATED CONSTRUCTION TIME:	-- MONTHS
2.	EROSION CONTROL MEASURES PLACED	WEEK 1 - WEEK 2
3.	SITE CLEARING AND GRUBBING	WEEK 2 - WEEK 5
4.	CONSTRUCTION OF ROAD SUBBASE FOR ACCESS	WEEK 5 - WEEK 13
5.	STORMWATER MANAGEMENT AREA CONSTRUCTION	WEEK 7 - WEEK 9
6.	UTILITY IMPROVEMENTS AND ROADWAY CONSTRUCTION	WEEK 7 - WEEK 24
7.	MULCH SPREAD FOR EROSION CONTROL	--

Att. 38

SEBAGO TECHNICS

CIVIL ENGINEERING · SURVEYING · LANDSCAPE ARCHITECTURE

CITY OF PORTLAND DELEGATED REVIEW

Maine Department of
Environmental Protection
38 M.R.S.A. §§ 481 to 490

SITE LOCATION OF DEVELOPMENT

Property Services Facility
250 Riverside Industrial Parkway, Portland

Prepared for:

Two Eisenhower Drive, LLC
PO Box 1120
Portland, Maine 04104

Prepared by:
Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, Maine 04106

September 2018

Table of Contents

Agency Letter
Corporate Status
Form A Application/Signature Page
Form D Submissions Checklist

Narratives and Attachments by Section

1. Development Description
Attachments:
USGS Site Location Map
Aerial Photograph
Plan Set (11x17)

2. Right, Title Interest
Attachments:
Deed

3. Financial Capactity
Attachments: Bank Letter

4. Technical Ability
Attachments:
Firm Bio and Key Personnel Resumes

5. Noise

6. Visual Quality & Scenic Character
Attachment:
Existing Conditions Site Photographs

7. Wildlife and Fisheries
Attachments:
MDIFW Site Review and Map
USFWS Species List
Wetland Report

8. Historic Sites
Attachments:
MHPC Response

9. Unusual Natural Areas
Attachments:
MNAP Response

10. Buffers

11. Soils
Attachments:
USDA Medium-Intensity Soils Map

12. Stormwater Management
Attachments:
Stormwater Management Report

13. Urban Impaired Streams

14. Basic Standards

15. Groundwater
Attachments:
Significant Sand & Gravel Aquifer Map
Surficial Geology Map
Bedrock Geology Map

16. Water Supply

17. Wastewater Disposal

18. Solid Waste

19. Flooding

20. Blasting

21. – 24. Air Emissions, Odors, Water Vapor, Sunlight

Other Attachments: Full size plans, individually folded

AGENT AUTHORIZATION

APPLICANT/ OWNER	**Name**	Two Eisenhower Drive LLC		
PROPERTY DESCRIPTION	**Physical Address**	250 Riverside Industrial Parkway Portland, Maine 04103	**Map**	330A
			Lots	B-1, B-4, B-11
APPLICANT'S AGENT INFORMATION	**Name**	Shawn M. Frank, P.E.		
	Phone	(207) 200-2062	**Business Name & Mailing Address**	Sebago Technics, Inc. 75 John Roberts Road, Suite 4A South Portland, Maine 04106
		Project Manager		

APPLICANT SIGNATURE DATE

8/5/18

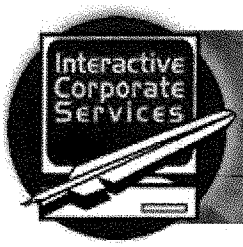
David Machesney, Representative
Two Eisenhower Drive, LLC

PLEASE TYPE OR PRINT NAME HERE

APPLICANT'S AGENT SIGNATURE DATE

PLEASE TYPE OR PRINT NAME HERE

Interactive Corporate Services



MAINE

Department of the Secretary of State

Bureau of Corporations, Elections and Commissions

Corporate Name Search

Information Summary

Subscriber activity report

This record contains information from the CEC database and is accurate as of: Thu Jun 28 2018 15:59:30. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
TWO EISENHOWER DRIVE, LLC	20021106DC	LIMITED LIABILITY COMPANY (DOMESTIC)	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
02/14/2002	N/A	MAINE

Other Names **(A=Assumed ; F=Former)**

NONE

Clerk/Registered Agent

GARY D. VOGEL
84 MARGINAL WAY, SUITE 600

PORTLAND, ME 04101 2480

Department of Environmental Protection
Bureau of Land & Water Quality
17 State House Station
Augusta, Maine 04333
Telephone: 207-287-3901

FOR DEP USE
ATS # _____
L-_____
Total Fees: _____
Date: Received _____

FORM A PAGE 1

****

SITE LOCATION OF DEVELOPMENT PERMIT APPLICATION 38 M.R.SA. §§481-490

PLEASE TYPE OR PRINT IN *INK ONLY*

This application is for: (CHECK THE ONE THAT APPLIES)	☐ 20 acre development ☐ Planning Permit ☐ Metallic Mining	☐ Marine Oil Terminal ☐ Structure ☐ Subdivision	☐ Major Amendment ☐ Minor Amendment

1. Name of Applicant:	Two Eisenhower Drive, LLC c/o David Machesney	**6. Name of Agent (if applicable):**	Shawn M. Frank, P.E. Sebago Technics, Inc.
2. Applicant's Mailing Address:	PO Box 1120 Portland, ME 04104	**7. Agent's Mailing Address:**	75 John Roberts Road, Suite 4A S. Portland, ME 04106
3. Applicant's Daytime Phone #:	(207) 854-5056	**8. Agent's Daytime Phone # :**	(207) 200-2062
4. Applicant's Fax # (if available):		**9. Agent's Fax # (if available):**	(207) 856-2206
5. Applicant's *e-mail address* (REQUIRED -license will be sent via: e-mail):	dmachesney@prattabbott.com	**10. Agent's *e-mail address* (REQUIRED - license will be sent via e-mail):**	sfrank@sebagotechnics.com

PROJECT INFORMATION

11. Name of Development:	250 Riverside Industrial Parkway						
12. Map and Lot #'s:	**Map #:** 330A	**Lot #:** B-1,B-4	**13. Deed Reference #'s:**		**Book #:** 32031	**Page #:** 39	
14. Location of Project City/Town:	Portland B-11	**15. County:**	Cumberland	**16. UTM Northing**	4839926	**17. UTM Easting**	394595
18. Brief Description of Project including total parcel size:	Development of a 12.4+/- Ac. undeveloped property which is p/o the Greater Portland Building Fund, Riverside Industrial Park (Lots 2 and A), CCRD 07/08/1975. The site will be developed for use as a property services business and includes a 11,200 sf footprint building, fleet and employee parking, entry drive, materials storage area, stormwater management features and other associated site improvements.						

19. Type of Direct Watershed: (Check all that apply)	☐ Lake not most at risk	☒ River, stream or brook	☐ Coastal wetland
	☐ Lake most at risk	☒ Urban impaired stream	☐ Wellhead or public water
	☐ Lake most at risk, severely blooming	☒ Freshwater wetland	

20. Name of Waterbody Project Site drains to:			
21. Amount of Developed Area:	Total acres: 5.03	Existing Developed area: 0.28 acres	New Developed area: ____ acres
22. Amount of Impervious Area:	Total acres: 3.36	Existing Impervious areas 0.28 acres	New Impervious area: 3.08 acres

23. Development started prior to obtaining a license?:	☐ Yes ☒ No		
24. .Development or any portion of the site subject to enforcement action?	☐ Yes ☒ No	**If yes**, name of enforcement staff involved?	
25. Common scheme of development?:	☐ Yes ☒ No	**26. Title, Right or Interest:**	☒ own ☐ lease ☐ purchase option ☐ written agreement
27. Natural Resources Protection Act permit required?:	☒ Yes ☐ No	**If yes:** ☒ PBR	☒ Tier 1 ☐ Full Permit ☐ Tier 2
28. Existing DEP Permit number (if applicable):	n/a		
29. Names of DEP staff person(s) present at the pre-application meeting:	City of Portland Delegated Review, Barbara Barhydt		
30. Does agent have an interest in project? If yes, what is the interest?	☐ Yes ☒ No		

CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

CERTIFICATIONS / SIGNATURES

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the electronic address located on the front page of this application (see #5 for the applicant and #10 for the agent)".

Signed: [signature] **Title** MGR. **Date:** 9/05/18

Notice of Intent to Comply with Maine Construction General Permit	**With this Site Law application form and my signature, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit (MCGP). I have read and will comply with all of the MCGP standards.** **If this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign.** **Signed** [signature] MGR. **Date:** 09/05/18

NOTE: You must file a MCGP Notice of Termination (Form K) within 20 days of completing permanent stabilization of the project site.

CERTIFICATION

The person responsible for preparing this application and/or attaching pertinent site and design information hereto, by signing below, certifies that the application for development approval is complete and accurate to the best of his/her knowledge.

Signature: [signature]

Name (print): Shawn M. Frank

Date: 09/12/2018

Re/Cert/Lic No.:

Engineer Shawn M. Frank, #6396 ME

Geologist

Soil Scientist

Land Surveyor

Site Evaluator

Active Member of the Maine Bar

Professional Landscape Architect

Other

FORM D

SUBMISSIONS CHECKLIST

If a provision is not applicable, put "NA"

Section 1. Development description

- A. Narrative
  - 1. Objectives and details
  - 2. Existing facilities (with dates of construction)
- B. Topographic map
  - 1. Location of development boundaries
  - 2. Quadrangle name
- C. Construction plan
  - 1. Outline of construction sequence (major aspects)
  - 2. Dates
- D. Drawings
  - 1. Development facilities
    - a. Location, function and ground area
    - b. Length/cross-sections for roads
  - 2. Site work (nature and extent)
  - 3. Existing facilities (location, function ground area and floor area)
  - 4. Topography
    - a. Pre- and post-development (contours 2 ft or less)
    - b. Previous construction, facilities and lot lines

Section 2. Title, right or interest (copy of document)

Section 3. Financial capacity

- A. Estimated costs
- B. Financing
  - 1. Letter of commitment to fund
  - 2. Self-financing
    - a. Annual report
    - b. Bank statement
  - 3. Other
    - a. Cash equity commitment
    - b. Financial plan
    - c. Letter
  - 4. Affordable housing information

Section 4. Technical ability (description)

- A. Prior experience (statement)
- B. Personnel (documents)

Section 5. Noise

- A. Developments producing a minor noise impact (statement)
  - 1. Residential developments
  - 2. Certain non-residential subdivisions
  - 3. Schools and hospitals
  - 4. Other developments
    - a. Type, source and location of noise
    - b. Uses, zoning and plans
    - c. Protected locations
    - d. Minor nature of impact

e. Demonstration

n/a B. Developments producing a major noise impact (full noise study)

1. Baseline
   a. Uses, zoning and plans
   b. Protected locations
   c. Quiet area
2. Noise generated by the development
   a. Type, source and location of noise
   b. Sound levels
   c. Control measures
   d. Comparison with regulatory limits
   e. Comparison with local limits

X **Section 6. Visual quality and scenic character**(narrative, description, visual impact analysis)

X **Section 7. Wildlife and fisheries** (narrative)

X **Section 8. Historic sites** (narrative)

X **Section 9. Unusual natural areas** (narrative)

Section 10. Buffers

X A. Site plan and narrative

Section 11. Soils

X A. Soil survey map and report -See Section 12
   1. Soil investigation narrative
   2. Soil survey map

B. Soil survey intensity level by development type
   1. Class A (High Intensity) Soil Survey
   2. Class B (High Intensity) Soil Survey
   3. Class C (Medium High-Intensity) Soil Survey
   4. Class D (Medium Intensity) Soil Survey

C. Geotechnical Investigation

X D. Hydric soils mapping -See Existing Conditions Plan

Section 12. Stormwater management

X A. Narrative
   1. Development location
   2. Surface water on or abutting the site
   3. Downstream ponds and lakes
   4. General topography
   5. Flooding
   6. Alterations to natural drainage ways
   7. Alterations to land cover
   8. Modeling assumptions
   9. Basic standard
   10. Flooding standard
   11. General standard
   12. Parcel size
   13. Developed area
   14. Disturbed area
   15. Impervious area

X B. Maps
   1. U.S.G.S. map with site boundaries
   2. S.C.S. soils map with site boundaries

X C. Drainage Plans (a pre-development plan and a post-development plan)

1. Contours
2. Plan elements
3. Land cover types and boundaries
4. Soil group boundaries
5. Stormwater quantity subwatershed boundaries
6. Stormwater quality subwatershed boundaries
7. Watershed analysis points
8. Hydrologic flow lines (w/flow types and flow lengths labeled)
9. Runoff storage areas
10. Roads and drives
11. Buildings, parking lots, and other facilities
12. Drainage system layout for storm drains, catch basins, and culverts
13. Natural and man-made open drainage channels
14. Wetlands
15. Flooded areas
16. Benchmark
17. Stormwater detention, retention, and infiltration facilities
18. Stormwater treatment facilities
19. Drainage easements
20. Identify reaches, ponds, and subwatersheds matching stormwater model
21. Buffers

D. Runoff analysis (pre-development and post development)
1. Curve number computations
2. Time of concentration calculations
3. Travel time calculations
4. Peak discharge calculations
5. Reservoir routing calculations

E. Flooding Standard
1. Variance submissions (if applicable)
   a. Submissions for discharge to the ocean, great pond, or major river
      i. Map
      ii. Drainage plan
      iii. Drainage system design
      iv. Outfall design
      v. Easements
   b. Insignificant increase
      i. Downstream impacts
   c. Submissions for discharge to a public stormwater system
      i. Letter of permission
      ii. Proof of capacity
      ii. Outfall analysis and design (pictures)
2. Sizing of storm drains and culverts
3. Stormwater ponds and basins
   a. Impoundment sizing calculations
   b. Inlet calculations
   c. Outlet calculations
   d. Emergency spillway calculations
   e. Subsurface investigation report
   f. Embankment specifications
   g. Embankment seepage controls
   h. Outlet seepage controls
   i. Detail sheet
   j. Basin cross sections
   k. Basin plan sheet
4. Infiltration systems
   a. Well locations map
   b. Sand and gravel aquifer map
   c. Subsurface investigation report with test pit or boring logs

d. Permeability analysis
e. Infiltration structure design
f. Pollutant generation and transport analysis
g. Monitoring and operations plan
i. Locations of storage points of potential contaminants
ii. Locations of observation wells and infiltration monitoring plan
iii. Groundwater quality monitoring plan

n/a 5. Drainage easement declarations.

F. Stormwater quality treatment plan peak discharge calculations

1. Basic stabilization plan
a. Ditches, swales, and other open channel stabilization
b. Culvert and storm-drain outfall stabilization
c. Earthen slope and embankment stabilization
d. Disturbed area stabilization
e. Gravel roads and drives stabilization

X 2. General Standard
a. Calculations for sizing BMP
b. Impervious area calculation
c. Developed area calculation
d. Summary spreadsheet of calculations

3. Phosphorus control plan
a. Calculations for the site's allowable phosphorus export
b. Calculations for determining the developed site's phosphorus export
c. Calculations for determining any phosphorus compensation fees

4. Offset Credits
a. Urban impaired stream
Offset credit calculation

n/a b. Phosphorus credit determination
i. Location map
ii. Scaled plan
iii. Title and right
iv. Demolition plan
v. Vegetation plan
vi. Offset credit calculation
vii. Calculation for the new allowable export

X 5. Runoff treatment measures
a. structural measures
i. Design drawings and specifications
ii. Design calculations
iii. Maintenance plan
iv. TSS removal or phosphorus treatment factor determinations
v. Stabilization plan
b. Vegetated buffers
i. Soil survey
ii. Buffer plan
iii. Turnout and level spreader designs
iv. Deed restrictions

6. Control plan for thermal impacts to coldwater fisheries

X 7. Control plan for other pollutants

X 8. Engineering inspection of stormwater management facilities

G. Maintenance of common facilities or property

1. Components of the maintenance plan
A. Maintenance of facilities by owner or operator
1. Site owner or operator (name legally responsible party)
2. Contact person responsible for maintenance
3. Transfer mechanism

4. List of facilities to be maintained
5. List of inspection and maintenance tasks for each facility
6. Identifications of any deed covenants, easements, or restrictions
7. Sample maintenance log
8. Copies of any third-party maintenance contracts

n/a B. Maintenance of facilities by homeowner's association
1. Incorporation documents for the association
2. Membership criteria
3. Association officer responsible for maintenance
4. Establishment of fee assessment for maintenance work
5. Establishment of lien system
6. Reference to department order(s) in association charter
7. Transfer mechanism from developer to association
8. List of facilities to be maintained
9. Identification of any deed covenants, easements, or restrictions
10. Renewal of covenants and leases
11. List of inspection and maintenance tasks for each facility
12. Sample maintenance log
13. Copies of any third-party maintenance contracts

n/a C. Maintenance of facilities by municipality or municipal district
1. Identification of the municipal department or utility district
2. Contact person responsible for maintenance
3. Evidence of acceptance of maintenance responsibility
4. Transfer mechanism from developer
5. List of facilities to be maintained
6. List of inspection and maintenance tasks for each facility
7. Identifications of any deed covenants, easements, or restrictions
8. Sample maintenance log

X 2. General inspection and maintenance requirements
a. Drainage easements
b. Ditches, culverts, and catch-basin systems
c. Roadways and parking surfaces
d. Stormwater detention and retention facilities
1. Embankment inspection and maintenance
2. Outlet inspection and clean-out
3. Spillway maintenance
4. Sediment removal and disposal
e. Stormwater infiltration facilities
1. Sediment protection plan
2. Infiltration rehabilitation plan
3. Sediment removal and disposal
4. Groundwater monitoring plan
f. Proprietary treatment devices
g. Buffers
h. Other practices and measures

Section 13. Urban Impaired Stream Submissions

1. Off-site credits
2. Compensation fees (Urban Impaired Stream/Phosphorus)
3. Development impacts

Section 14. Basic Standards

X A. Narrative
1. Soil types
2. Existing erosion problems
3. Critical areas
4. Protected natural resources
5. Erosion control measures

6. Site stabilization

B. Implementation schedule

C. Erosion and sediment control plan
   1. Pre-development and post-development contours
   2. Plan scale and elements
   3. Land cover types and boundaries
   4. Existing erosion problems
   5. Critical areas
   6. Protected natural resources
   7. Locations (general)
   8. Locations of controls
   9. Disturbed areas
   10. Stabilized construction entrance

D. Details and specifications (for both temporary and permanent measures)

E. Design calculations

F. Stabilization plan
   1. Temporary seeding
   2. Permanent seeding
   3. Sodding
   4. Temporary mulching
   5. Permanent mulching

G. Winter construction plan
   1. Dormant seeding
   2. Winter mulching

n/a

H. Third-party inspections
   1. Inspector's name, address, and telephone number
   2. Inspector's qualifications
   3. Inspection schedule
   4. Contractor contact
   5. Reporting protocol

Section 15. Groundwater

X

A. Narrative
   1. Location and maps
   2. Quantity
   3. Sources
   4. Measures to prevent degradation

B. Groundwater protection plan

n/a

C. Monitoring plan
   1. Monitoring points
   2. Monitoring frequency
   3. Background conditions
   4. Monitoring parameters
   5. Personnel qualifications
   6. Proof of training
   7. Equipment and methods
   8. Quality assurance/quality control
   9. Reporting requirements
   10. Remedial action plan

n/a

D. Monitoring well installation report
   1. Well location map
   2. Elevation data
   3. Well installation data
   4. Well construction details
   5. Borehole logs
   6. Summary of depth measurements
   7. Characteristics of subsurface strata
   8. Well installation contract

9. Schematic cross-sections
10. Monitoring point summary table
11. Protective casing
12. On-site well identification

Section 16. Water supply

X A. Water supply method
1. Individual wells (evidence of sufficient/healthful supply)
a. Support of findings by well drillers
b. Support of findings by geologist
2. Common well(s) (reports)
a. Hydrogeology report
b. Engineering report
c. Well installation report
d. Long-term safe yield and zone of influence determination
e. Public water supply
i. Proposed well or wells
ii. Existing well or wells
iii. Water quality analysis
3. Well construction in shallow-to-bedrock areas
4. Additional information
X 5. Off-site utility company or public agency
6. Other sources

B. Subsurface wastewater disposal systems (locations of systems and wells)
C. Total usage (statement re: total anticipated water usage)

Section 17. Wastewater disposal

n/a A. On-site subsurface wastewater disposal systems (investigation results)
1. Site plan
2. Soil conditions summary table
3. Logs of subsurface explorations
4. Additional test pits, borings or probes
a. Soil conditions A
b. Soils with Profiles 8 and 9 parent material
c. Soil conditions D
d. Disposal field length 60 feet or greater
5. 3-bedroom design
6. Larger disposal systems
a. System design details
b. Plan view
c. Cross sections
d. Test pit data
e. Mounding analysis

B. Nitrate-nitrogen impact assessment
1. When required
a. Exempted____
i. Conventional systems meeting certain setbacks
ii. Denitrification systems
b. Special conditions and other exemptions
2. Assumptions
a. Initial concentration
b. Background concentration
c. Contribution from development
d. Mixing and dilution
e. Severe-drought scenario
f. Wastewater flow to subsurface wastewater disposal fields

3. Assessment report minimum requirements
    a. Narrative and calculations
    b. Site plan
        i. Well locations
        ii. 10 mg/l and 8 mg/l isocons
        iii. Groundwater contours and groundwater flow divides
    c. References
4. Denitrification systems
    a. Design plans and specifications
    b. Installation information
    c. Monitoring plan
    d. Maintenance
    e. Backup system

X D. Municipal facility or utility company letter

n/a E. Storage or treatment lagoons

X **Section 18. Solid waste** (list: type, quantity, method of collection and location)

A. Commercial solid waste facility (final disposal location)

B. Off-site disposal of construction/demolition debris (final disposal location)

C. On-site disposal of woodwaste/land clearing debris

1. Applicability of rules (evidence re: applicability of rules)
2. Burning of wood wastes
    a. Delineation on site plan
    b. Plans for handling unburned woodwaste and woodash
    c. Evidence of capacity to accept waste (approved facility)
    d. Usage of materials
    e. Data on mixing ratios and application rates

D. Special or Hazardous Waste

Section 19. Flooding

X A. Explanation of flooding impact

n/a B. Site plan showing 100-year flood elevation

n/a C. Hydrology analysis

X D. FEMA flood zone map with site boundaries

Section 20. Blasting

A. Site Plan or map

X B. Report
1. Assessment
2. Blasting plan

Section 21. Air emissions (narrative and summary)

n/a A. Point and non-point sources identified

B. Emission components (point sources)

Section 22. Odors

n/a A. Identification of nature/source

B. Estimate of areas affected

C. Methods of control)

n/a **Section 23. Water vapor** (narrative)

n/a **Section 24. Sunlight** (statement and drawing, if required)

Section 25. Notices

X A. Evidence that notice sent

X B. List of abutters for purposes of notice

Section 1

Development Description

Section 1: Development Description

A. Narrative

The project site is located in the City of Portland's Riverton area between Riverside Street and the Maine Turnpike (I-95) with street frontage on Riverside Industrial Parkway. The proposed new entry drive is located approximately 400 feet north of Milliken Drive on the opposite side of the street. This location is opportune for the project given its size and IM Zoning. The project site is approximately 12.4 acres in size and has access to Riverside Industrial Parkway. The project site is shown as Lots 2 and A on a recorded plan entitled *Greater Portland Building Fund, Composite Plan, Riverside Industrial Park by H.I. & E.C. Jordan*, CCRD 07/09/1975

The parcel is primarily wooded and undeveloped with the exception of an existing parking lot and adjacent cleared area. The existing parking lot benefits the neighboring business that is under the same ownership. The portion of the site to be developed generally has flatter topography with an unnamed stream that runs approximately parallel to the northeasterly property line. The development area also contains mapped freshwater wetland area, a portion of which, will be impacted by the proposed site development.

The development program includes a new entry drive from Riverside Industrial Parkway to the building site that will provide employee parking, a large circulation area for fleet vehicles and trailers, deliveries and 14,720 square-foot +/- building (11,200 square-foot footprint). The site will have a private fueling area, landscape materials storage employee and fleet parking. Additionally, the site will include dedicated snow storage area and a series of under-drained soil filters for stormwater management. In total the disturbed area for development area is approximately 5.15 acres.

A Maine Construction General Permit Application (MCGP) that is p/o of the SLODA review DEP application, Tier 1 Natural Resourced Protection Act Permit (NRPA) for ~~7,448~~ 6,849.5 sf of wetland alteration and NRPA Permit by Rule (PBR) for the entry drive stream crossing and adjacency for drive construction. In addition, a U.S. Army Corp of Engineers permit is required for wetland impact and the stream crossing. These applications will be reviewed concurrently with City of Portland Level III Site review application.

A stormwater management plan has been prepared to include treatment of runoff to meet Maine DEP and City of Portland requirements. Stormwater from the developed area will be treated through a series of under-drained soil filters. The site has been designed to comply with General, Basic, Flooding and the Urban Impaired Stream Standards of MDEP Ch. 500 Stormwater. Erosion controls will be installed to protect resources as shown on the enclosed site plans showing placement, a written ESC Plan and details.

The applicant is hopeful to complete the permitting process through the City and Maine DEP by late summer to allow for early autumn start in 2018 and completion in 2019.

B. Topographic map

Reference is made to the enclosed USGS Site Location Map and Aerial Photograph, this section.

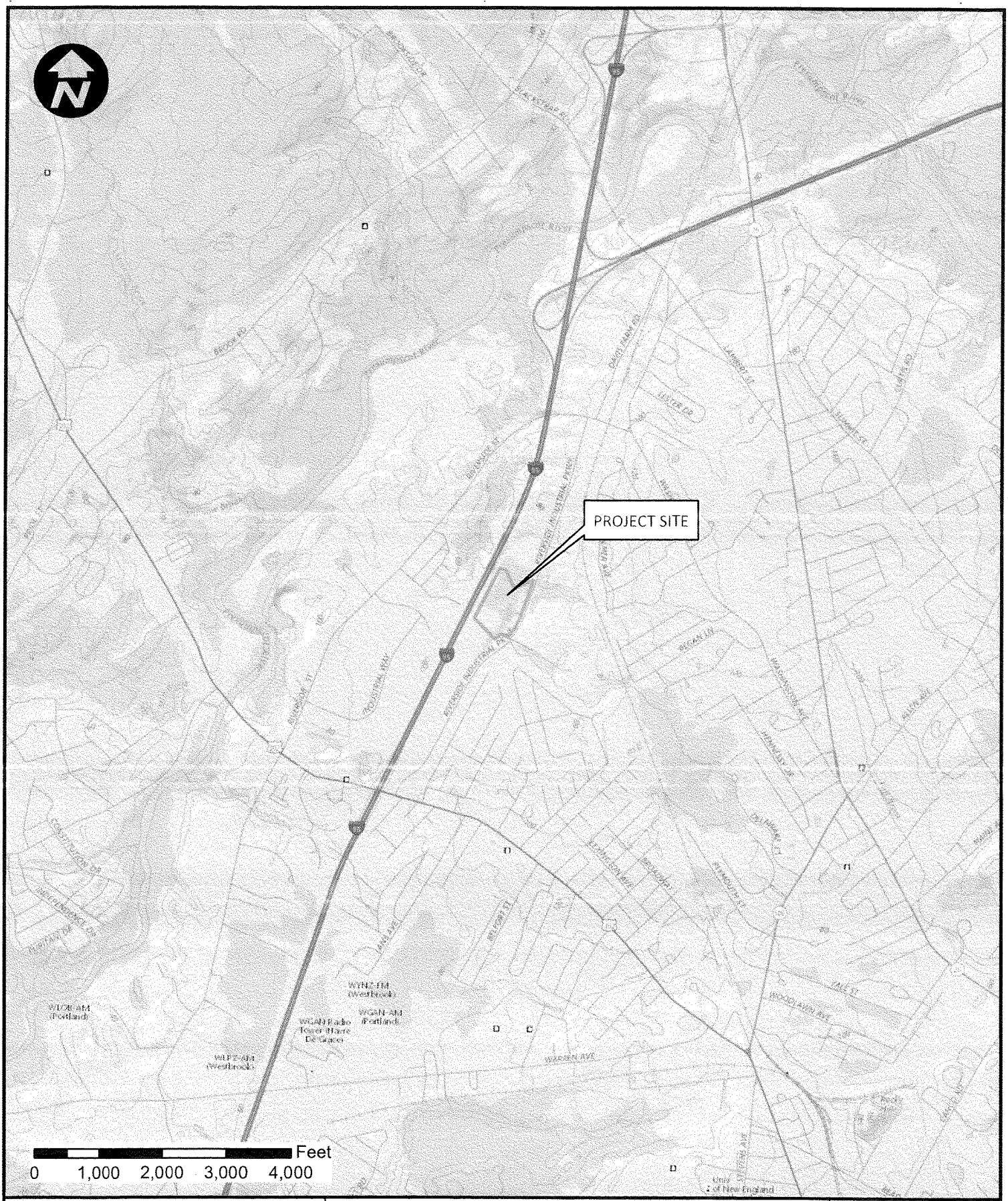
C. Construction Plan

Anticipated schedule late autumn 2018 through May 2019.

Estimated construction time: ---------- 32 Weeks (8 Months)
Erosion Control Measures Placed: ---------- Week 1
Site clearing and grubbing ---------- Weeks 2-6
Construction of drive subbase for access ---------- Weeks 3-5
Stream Crossing ---------- Week 3
Stormwater management construction ---------- Weeks 4 – 12
Utility Improvements and access drive construction ----- Weeks 4 – Week 6
Road base and asphalt binder coarse (prior to plant shutdown) Weeks 6- 8
Final entry drive paving ---------- Week 22
Final yard grading and compaction ---------- Week 20-22
Start final seeding on prepared areas ---------- Week 24
Biweekly monitoring of vegetative growth ---------- Week 26
Re-seeding of areas, if needed ---------- Week 26-32
Removal of erosion control devices ---------- Upon Final Project Completion

D. Drawings

Refer to 11x17 Site Plans, this section and the appended folded full-size plans.



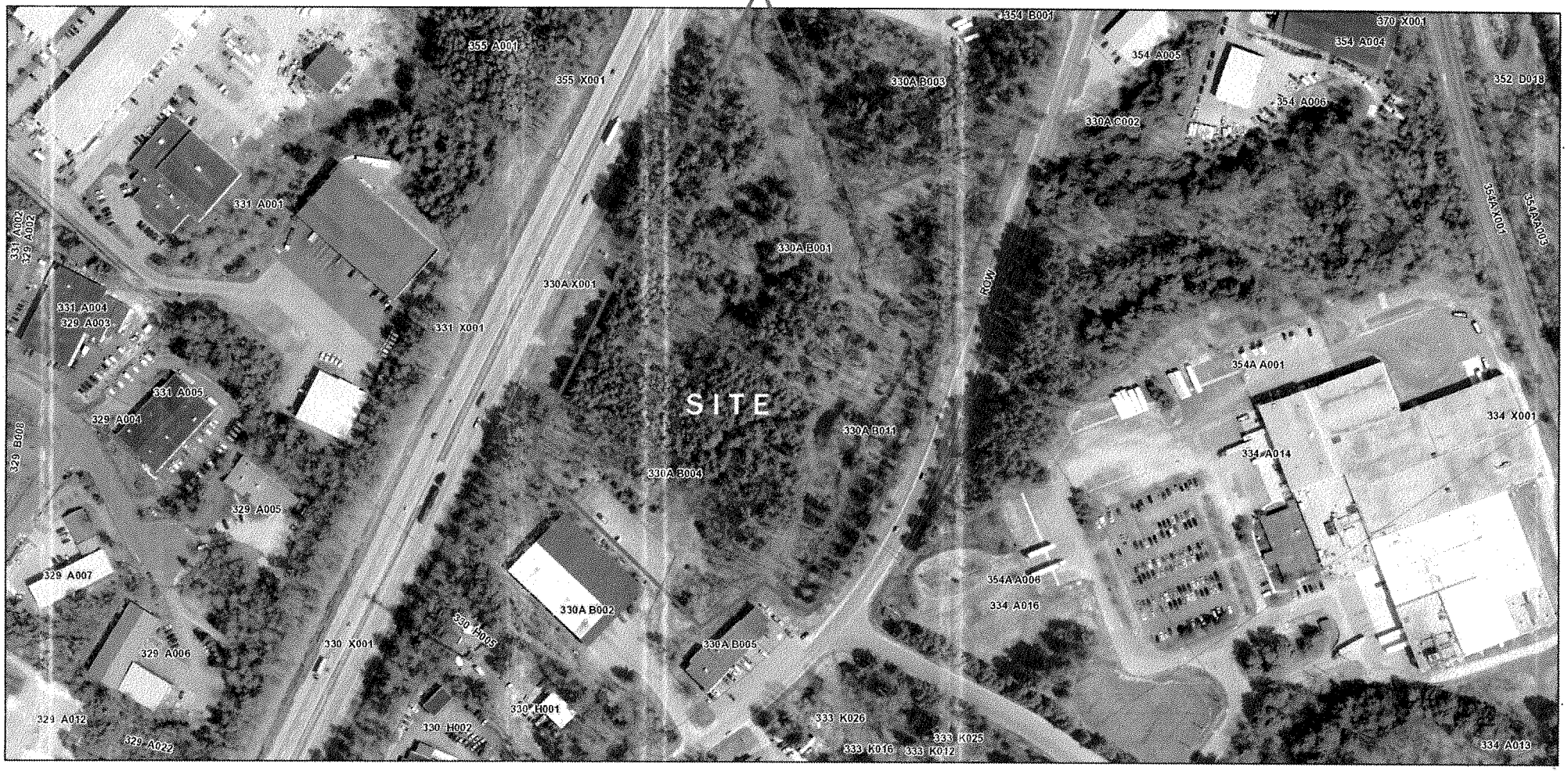
SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. - Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	SITE LOCATION MAP TWO EISENHOWER DRIVE, LLC	SCALE:	1 " = 2,000 '
		DATE:	06/20/2018
LOCATION:	250 Riverside Industrial Parkway Portland, ME 04103	INFORMATION:	USGS Quadrangle: Portland West

16360_LocationMap.mxd

PROJECT NUMBER: 16360



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Parcels

Portland_Photos_2015

Red: Band_1

Green: Band_2

Blue: Band_3

1:2,178

0 140 280 560 ft

0 40 80 160 m

City of Portland, DPS

Web AppBuilder for ArcGIS
City of Portland, Maine

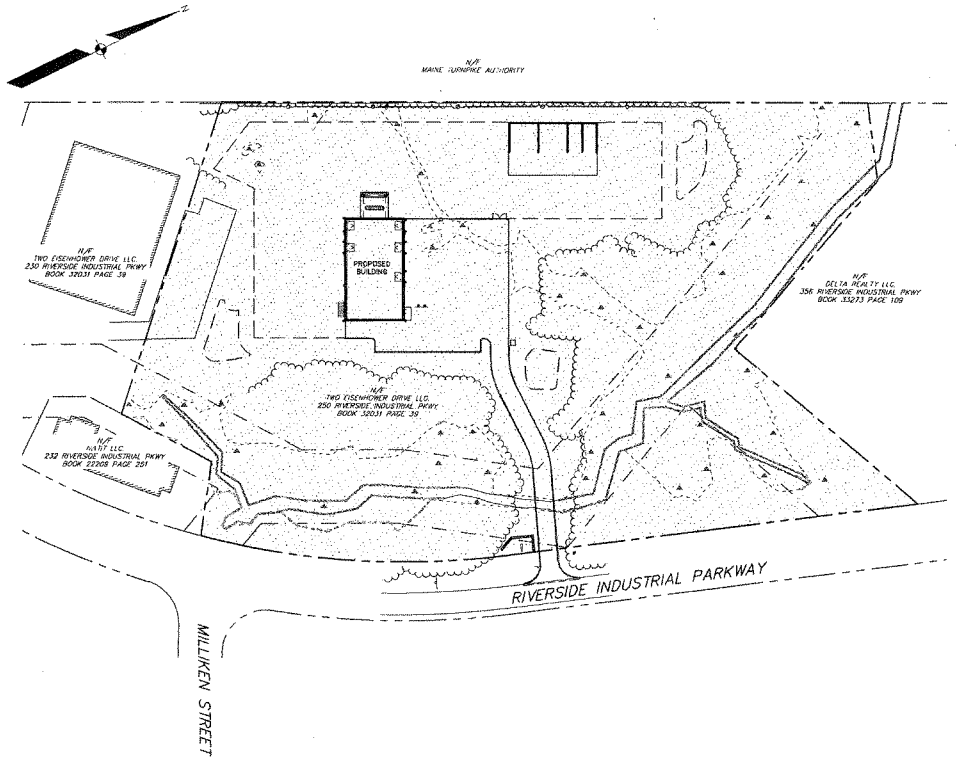
250 RIVERSIDE INDUSTRIAL PARKWAY

RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE

OWNER/APPLICANT:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

ENGINEER/SURVEYOR/
LANDSCAPE ARCHITECT:

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100



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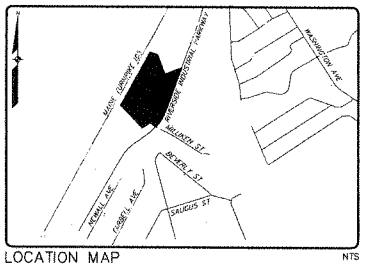
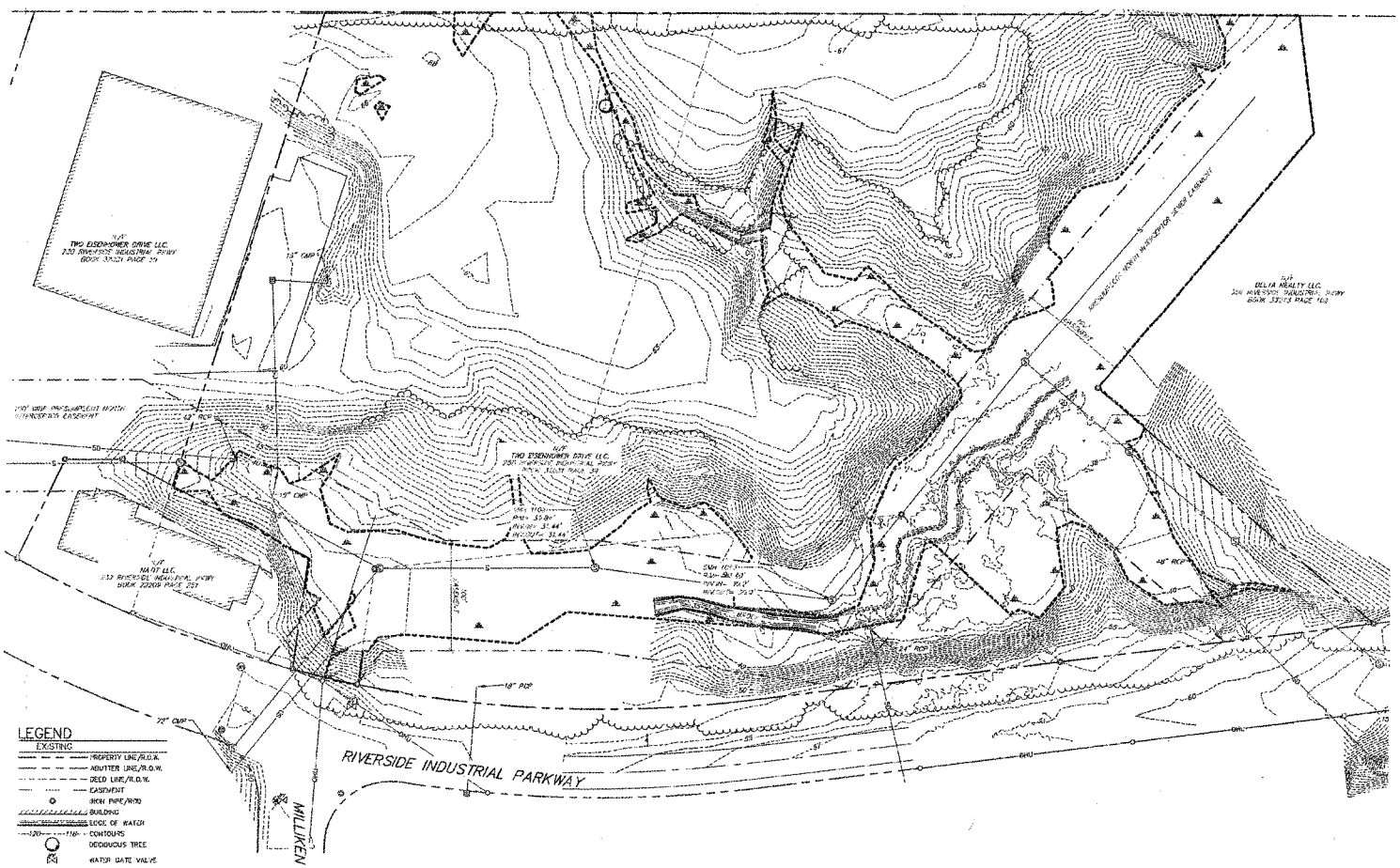


LOCATION MAP NTS

SHEET INDEX

SHEET	DESCRIPTION
1	COVER SHEET
2	EXISTING CONDITIONS PLAN
3	SITE PLAN
4	UTILITY PLAN
5	GRADING AND EROSION CONTROL PLAN
6	POND CONSTRUCTION PLANS
7	DETAILS
8	DETAILS
9	DETAILS
10	LANDSCAPING PLAN
11	PRE-DEVELOPMENT WATERSHED PLAN
12	POST-DEVELOPMENT WATERSHED PLAN

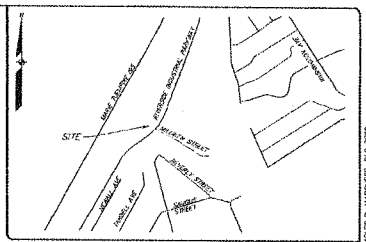
REVISED THROUGH 8-27-18



LEGEND

EXISTING

- PROPERTY LINE/R.O.W.
- ABUTTER LINE/R.O.W.
- DEED LINE/R.O.W.
- EASEMENT
- IRON PIPE/ROD
- BUILDING
- EDGE OF WATER
- CONTOURS
- DECIDUOUS TREE
- WATER GATE VALVE
- SANITARY SEWER
- SANITARY MANHOLE
- STORM DRAIN
- CATCH BASIN
- OVERHEAD UTILITY
- UTILITY POLE
- MANHOLE
- EDGE PAVEMENT
- EDGE WETLAND
- WETLANDS



LOCATION MAP N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS TWO EISENHOWER DRIVE LLC., BY DEED DATED JANUARY 16, 2015 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 32531, PAGE 39.
2. THE PROPERTY IS SHOWN AS LOT 2001 ON THE CITY OF PORTLAND TAX MAP 330A AND IS LOCATED IN THE IM DISTRICT.
3. SPACE AND BULK CRITERIA FOR THE IM DISTRICT ARE AS FOLLOWS:

NET RESIDENTIAL DENSITY:	
MINIMUM LOT SIZE:	10,000 SQ. FT.
MINIMUM STREET FRONTAGE:	50 FT.
MINIMUM FRONT YARD:	1 FT. PER 1FT. HEIGHT OF BUILDING (MAX 25 FT.)
MINIMUM SIDE YARD:	1 FT PER 1FT. HEIGHT OF BUILDING (MAX 25 FT.)
MINIMUM REAR YARD:	1 FT. PER 1FT. HEIGHT OF BUILDING (MAX 25 FT.)
MAXIMUM BUILDING HEIGHT:	75 FT.
MAXIMUM IMPERVIOUS RATIO:	75%

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 12.4 ACRES.
5. NO INDEPENDENT BOUNDARY RETRACEMENT SURVEY WAS PERFORMED BY SEBAGO TECHNICS, INC. BOUNDARY INFORMATION SHOWN IS BASED SOLELY UPON INFORMATION FROM PLAN REFERENCE 7A.
6. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. ON MARCH 20, 2018 AND IN PART FROM A WORKSHEET PROVIDED BY NORTHEAST CIV. SOLUTIONS.
7. PLAN REFERENCES:
   A. CONCEPTUAL SITE PLAN FOR COMMERCIAL/INDUSTRIAL DEVELOPMENT FOR RECORD OWNER R.M. DAMS INC C/O ARTHUR DONOVAN" PREPARED BY NORTHEAST CIVIL SOLUTIONS, DATED JULY, 2018.
7. PLAN ORIENTATION IS GRID NORTH. MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802 (NAD83). ELEVATIONS DEPICTED HEREON ARE NAVD88 BASED ON DUAL FREQUENCY GPS OBSERVATIONS. TO CONVERT TO THE CITY OF PORTLAND DATUM, ADD 0.69 FEET BASED ON U.S. ARMY CORPS OF ENGINEERS CORPSCON 6.0.1 SOFTWARE IN THIS VICINITY.
8. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
9. WETLAND INFORMATION DEPICTED HEREON WAS TAKEN FROM PLAN REFERENCE 7A. NO INDEPENDENT WETLAND DELINEATION WAS PERFORMED BY SEBAGO TECHNICS, INC.

SURVEYOR'S STATEMENT

THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT WAS DONE IN ACCORDANCE WITH CHAPTER 90, PART 1 (PROFESSIONAL STANDARDS OF PRACTICE) AND PART 2 (TECHNICAL STANDARDS OF PRACTICE) OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS.

CHARLES D. MARCHESE, PLS 3009 — JULY 17, 2018

STATE OF MAINE — CHARLES D. MARCHESE — 3009 — REGISTERED PROFESSIONAL LAND SURVEYOR

CHARLES D. MARCHESE, PLS 3009

DRAWN	CHECKED
MAC/BKW	CDM

NO.	DATE	STATUS
1	7-13-18	ISSUED TO CITY
2	3-28-18	ISSUED FOR CLIENT REVIEW
REV.	DATE	STATUS

THIS PLAN SHALL NOT BE MODIFIED IN WHOLE OR IN PART WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS AUTHORIZED BY OTHERS SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

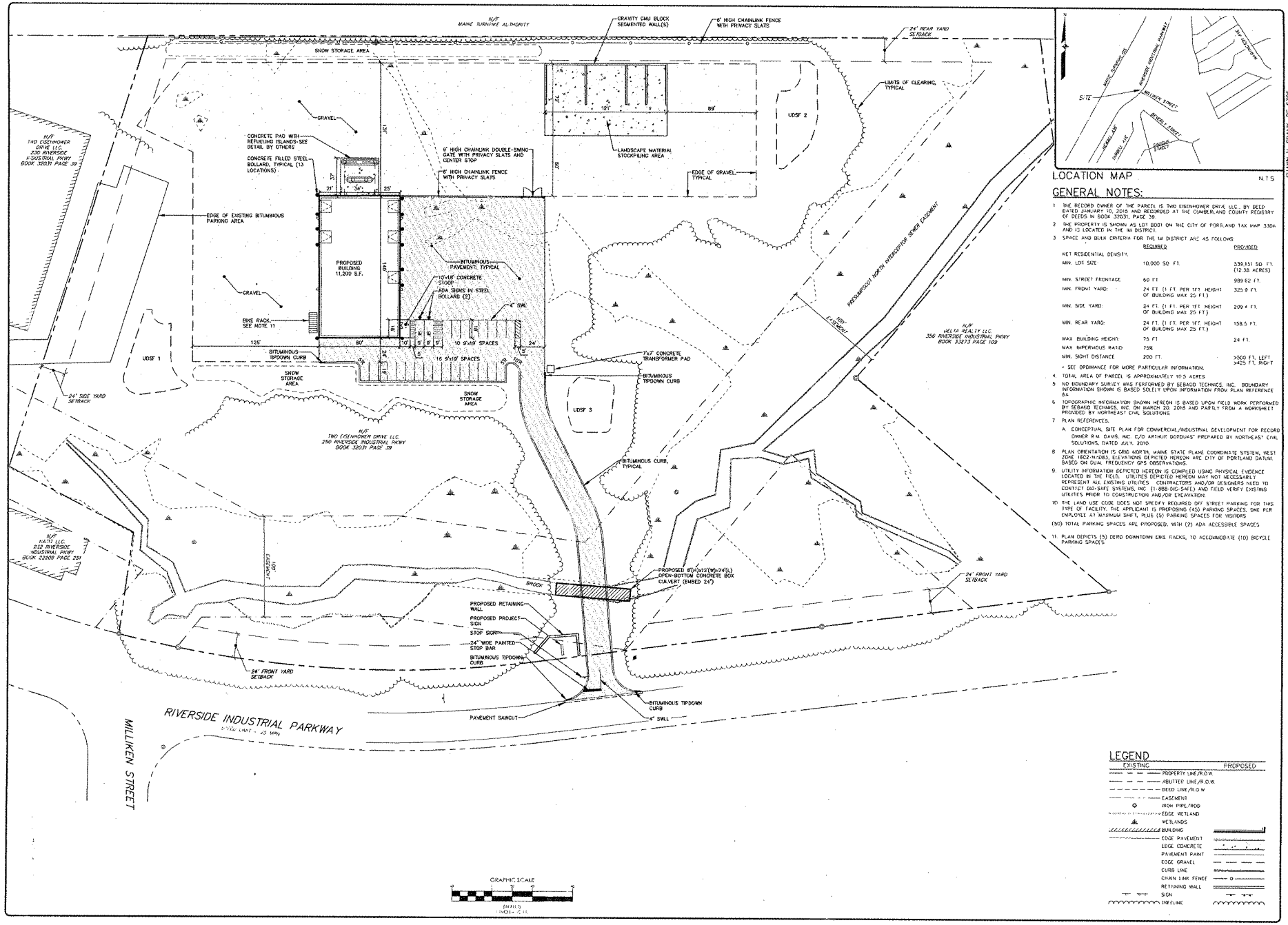
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
South Portland, ME 04106
tel: 207-200-2100

EXISTING CONDITIONS PLAN
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 50'

SHEET 2 OF 10

16360EC-Proj. Tab. 16360EC



LOCATION MAP N.T.S

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS TWO EISENHOWER DRIVE LLC., BY DEED DATED JANUARY 10, 2018 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 32031, PAGE 39.
2. THE PROPERTY IS SHOWN AS LOT B001 ON THE CITY OF PORTLAND TAX MAP 330A AND IS LOCATED IN THE IM DISTRICT.
3. SPACE AND BULK CRITERIA FOR THE IM DISTRICT ARE AS FOLLOWS:

	REQUIRED	PROVIDED
NET RESIDENTIAL DENSITY:		
MIN. LOT SIZE:	10,000 SQ FT.	539,151 SQ FT. (12.38 ACRES)
MIN. STREET FRONTAGE:	60 FT.	989.62 FT.
MIN. FRONT YARD:	24 FT. (1 FT. PER 1FT. HEIGHT OF BUILDING MAX 25 FT.)	325.9 FT.
MIN. SIDE YARD:	24 FT. (1 FT. PER 1FT. HEIGHT OF BUILDING MAX 25 FT.)	209.4 FT.
MIN. REAR YARD:	24 FT. (1 FT. PER 1FT. HEIGHT OF BUILDING MAX 25 FT.)	158.5 FT.
MAX BUILDING HEIGHT:	75 FT.	24 FT.
MAX IMPERVIOUS RATIO:	75%	
MIN. SIGHT DISTANCE:	200 FT.	>300 FT. LEFT, >425 FT. RIGHT

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 10.5 ACRES
5. NO BOUNDARY SURVEY WAS PERFORMED BY SEBAGO TECHNICS, INC. BOUNDARY INFORMATION SHOWN IS BASED SOLELY UPON INFORMATION FROM PLAN REFERENCE 6A.
6. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. ON MARCH 20, 2018 AND PARTLY FROM A WORKSHEET PROVIDED BY NORTHEAST CIVIL SOLUTIONS.
7. PLAN REFERENCES:
   A. CONCEPTUAL SITE PLAN FOR COMMERCIAL/INDUSTRIAL DEVELOPMENT FOR RECORD OWNER R.M. DAVIS, INC. C/O ARTHUR DORDUAS" PREPARED BY NORTHEAST CIVIL SOLUTIONS, DATED JULY, 2010.
8. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON ARE CITY OF PORTLAND DATUM, BASED ON DUAL FREQUENCY GPS OBSERVATIONS.
9. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
10. THE LAND USE CODE DOES NOT SPECIFY REQUIRED OFF STREET PARKING FOR THIS TYPE OF FACILITY. THE APPLICANT IS PROPOSING (40) PARKING SPACES, ONE PER EMPLOYEE AT MAXIMUM SHIFT, PLUS (5) PARKING SPACES FOR VISITORS.

(50) TOTAL PARKING SPACES ARE PROPOSED, WITH (2) ADA ACCESSIBLE SPACES

11. PLAN DEPICTS (5) DERO DOWNTOWN BIKE RACKS, TO ACCOMMODATE (10) BICYCLE PARKING SPACES.

LEGEND

EXISTING	PROPOSED
	PROPERTY LINE/R.O.W.
	ABUTTER LINE/R.O.W.
	DEED LINE/R.O.W.
	EASEMENT
	IRON PIPE/ROD
	EDGE WETLAND
	WETLANDS
	BUILDING
	EDGE PAVEMENT
	EDGE CONCRETE
	PAVEMENT PAINT
	EDGE GRAVEL
	CURB LINE
	CHAIN LINK FENCE
	RETAINING WALL
	SIGN
	TREELINE

PROGRESS PRINT

STATE OF MAINE — SHAWN M. FRANK — 6,568 — REGISTERED PROFESSIONAL ENGINEER — 8/27/18

SHAWN M. FRANK, PE, 6,568

DESIGNED	CHECKED
SAH	SMF

REV	BY	DATE	STATUS
B	SMF	8-27-18	REVISED PER CITY COMMENTS
A	SMF	7-13-18	ISSUED TO CITY

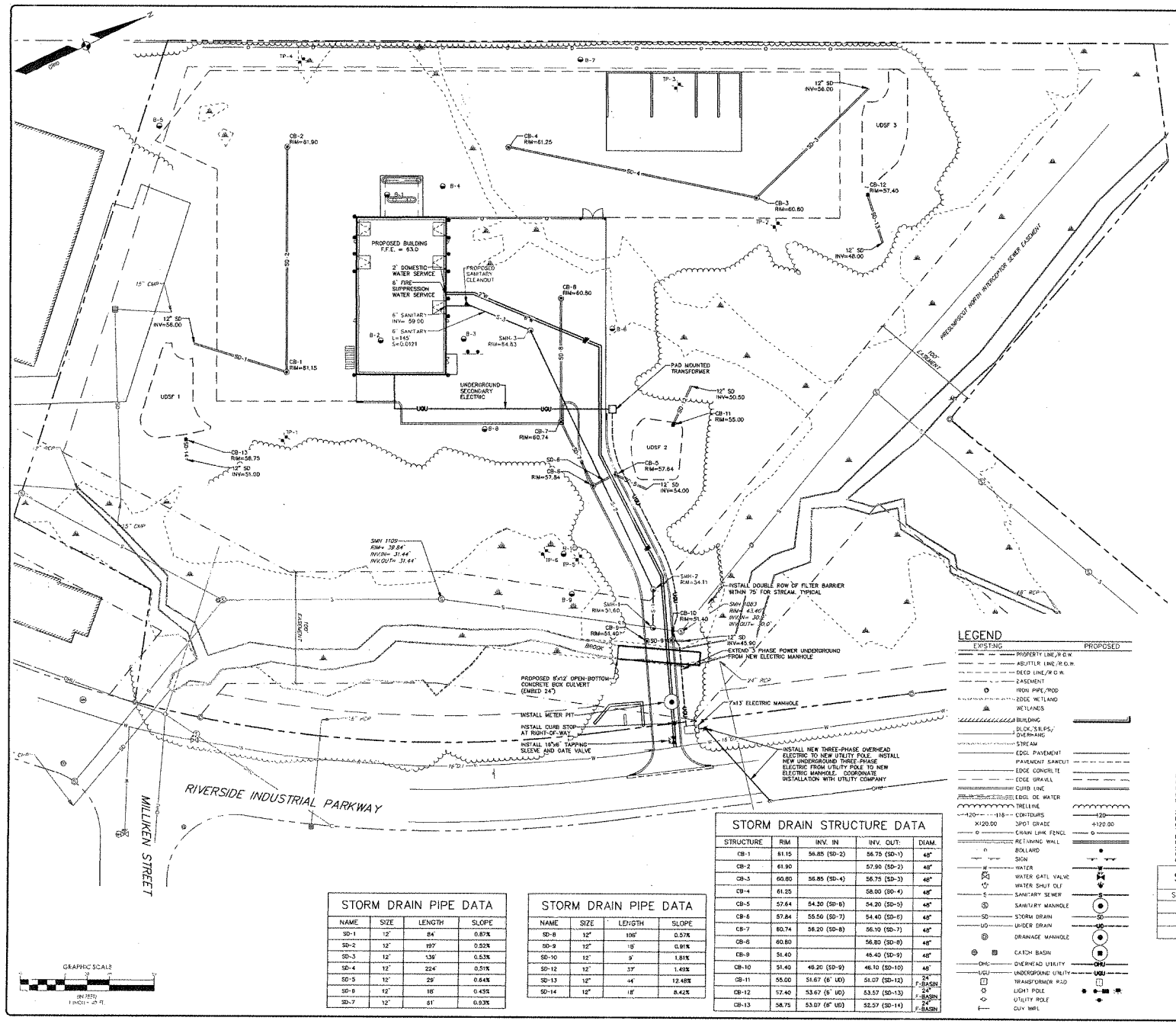
THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS MADE HEREON OR OTHERWISE SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd
Suite C
South Portland, ME 04106
tel: (207) 200-2100

SITE PLAN
OF
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16380	1" = 40'

SHEET 3 OF 12



CONSTRUCTION NOTES

1. ALL WORK SHALL CONFORM TO THE APPLICABLE CODES AND ORDINANCES.

2. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIM OR HERSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIM OR HERSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

3. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS 'EXISTING' WHICH ARE NOT FOUND IN THE FIELD.

4. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND OWNER'S REQUIREMENTS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.

5. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.

6. CONTRACTOR SHALL CLEAN AND REMOVE DEBRIS AND SEDIMENT DEPOSITED ON PUBLIC STREETS, SIDEWALKS, ADJACENT AREAS, OR OTHER PUBLIC WAYS DUE TO CONSTRUCTION.

7. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION AND AS DIRECTED BY DESIGN DRAWINGS.

8. SITE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.

9. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" PUBLISHED BY THE BUREAU OF LAND AND WATER QUALITY OF THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2003 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.

10. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN HEREON ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY UTILITY COMPANIES. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (811) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.

11. CONTRACTOR SHALL BE AWARE THAT DIG SAFE ONLY NOTIFIES ITS "MEMBER" UTILITIES ABOUT THE DIG. WHEN NOTIFIED, DIG SAFE WILL ADVISE CONTRACTOR OF MEMBER UTILITIES IN THE AREA. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND CONTACTING NON-MEMBER UTILITIES DIRECTLY. NON-MEMBER UTILITIES MAY INCLUDE TOWN OR CITY WATER AND SEWER DISTRICTS AND SMALL LOCAL UTILITIES, AS WELL AS USG PUBLIC WORKS SYSTEMS.

12. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA §3360-A. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITIES TO OBTAIN AUTHORIZATION PRIOR TO RELOCATION OF ANY EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS. IF A UTILITY CONFLICT ARISES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER, THE MUNICIPALITY AND APPROPRIATE UTILITY COMPANY PRIOR TO PROCEEDING WITH ANY RELOCATION.

13. ALL PAVEMENT MARKINGS AND DIRECTIONAL SIGNAGE SHOWN ON THE PLAN SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.

14. ALL PAVEMENT JOINTS SHALL BE SAWCUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.

15. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.

16. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL REQUIRE A M.D.O.T. PERMIT AS WELL AS PERMITS FROM THE MUNICIPALITY AS APPLICABLE.

17. THE APPROVED LIMITS OF CLEARING SHOWN HEREON ARE APPROXIMATE BASED UPON THE PROPOSED LIMITS OF SITE GRADING. THE APPLICANT RESERVES THE RIGHT TO PERFORM NORMAL FOREST MANAGEMENT ACTIVITIES OUTSIDE OF THE CLEARING LIMIT AS SHOWN. TREE REMOVAL OUTSIDE OF THE LIMITS OF CLEARING MAY BE NECESSARY TO REMOVE DEAD OR DYING TREES OR WIDE LIMBS. THIS REMOVAL IS DUE TO POTENTIAL SAFETY HAZARDS AND TO PROMOTE PROPER FOREST GROWTH.

18. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND AS SPECIFIED ON PLANS.

19. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR THE REMOVAL, REPLACEMENT AND RECTIFICATION OF ALL DAMAGED AND DEFECTIVE MATERIAL AND WORKMANSHIP IN CONNECTION WITH THE CONTRACT WORK. THE CONTRACTOR SHALL REPLACE OR REPAIR AS DIRECTED BY THE OWNER ALL SUCH DAMAGED OR DEFECTIVE MATERIALS WHICH APPEAR WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.

20. ALL WORK PERFORMED BY THE GENERAL CONTRACTOR AND/OR TRADE SUBCONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF LOCAL, STATE OR FEDERAL LAWS, AS WELL AS AND OTHER GOVERNING REQUIREMENTS, WHETHER OR NOT SPECIFIED ON THE DRAWINGS.

21. WHERE THE TERMS "APPROVED EQUAL", "OTHER APPROVED", "EQUAL TO", "ACCEPTABLE" OR OTHER GENERAL QUALIFYING TERMS ARE USED IN THESE NOTES, IT SHALL BE UNDERSTOOD THAT REFERENCE IS MADE TO THE RULING AND JUDGMENT OF SEBAGO TECHNICS, INC.

22. THE GENERAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION FOR THE WORK UNTIL TURNED OVER TO THE OWNER.

23. THE GENERAL CONTRACTOR SHALL MAINTAIN A CURRENT AND COMPLETE SET OF CONSTRUCTION DRAWINGS ON SITE DURING ALL PHASES OF CONSTRUCTION FOR USE OF ALL TRADES.

24. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.

25. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. ANY MODIFICATION TO SUIT FIELD DIMENSION AND CONDITION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY WORK.

26. BEFORE THE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND MATERIALS, REPAIR OR REPLACE PRIVATE OR PUBLIC PROPERTY WHICH MAY HAVE BEEN DAMAGED OR DESTROYED DURING CONSTRUCTION, CLEAN THE AREAS WITHIN AND ADJACENT TO THE PROJECT WHICH HAVE BEEN OBSTRUCTED BY HIS/HER OPERATIONS, AND LEAVE THE PROJECT AREA NEAT AND UNSTAINED.

27. ALL SUBSURFACE UTILITY LINES SHOWN HEREON ARE BASED SOLELY ON THE FIELD LOCATION OF VISIBLE STRUCTURES, SUCH AS: EB'S, HYDRANTS, ETC., IN CONJUNCTION WITH DESIGN AND OR AS-BUILT PLANS SUPPLIED TO SEBAGO TECHNICS INC BY OTHERS. PRIOR TO ANY CONSTRUCTION, EXCAVATION, TEST BORINGS, DRILLING, ETC., DIG SAFE MUST BE NOTIFIED AND A SITE IDENTIFICATION NUMBER ALONG WITH A DATE TO DIG DATE OBTAINED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING THE LOCATION, DEPTH AND MATERIAL OF ALL SUBSURFACE UTILITY LINES SHOWN HEREON AND ANY AND ALL OTHERS LOCATED ON SITE WITHIN THE CONSTRUCTION AREA.

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER LINE/R.O.W.	
DEED LINE/R.O.W.	
EASEMENT	
IRON PIPE/ROD	
EDGE WETLAND	
WETLANDS	
BUILDING	
BLDG. SLIPS/ OVERHANG	
STREAM	
EDGE PAVEMENT	
PAVEMENT SAWCUT	
EDGE CONCRETE	
EDGE GRAVEL	
CURB LINE	
EDGE OF WATER	
TREELINE	
120 118 CONTOURS	120
x120.00 SPOT GRADE	+120.00
CHAIN LINK FENCE	
RETAINING WALL	
BOLLARD	
SIGN	
WATER	W
WATER GATE VALVE	
WATER SHUT OFF	
SANITARY SEWER	S
SANITARY MANHOLE	S
SD STORM DRAIN	SD
UD UNDER DRAIN	UD
DRAINAGE MANHOLE	
CATCH BASIN	
OHU OVERHEAD UTILITY	OHU
UGU UNDERGROUND UTILITY	UGU
TRANSFORMER PAD	
LIGHT POLE	
UTILITY POLE	
GUY WIRE	

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-1	12"	84'	0.87%
SD-2	12"	197'	0.52%
SD-3	12"	139'	0.53%
SD-4	12"	224'	0.51%
SD-5	12"	29'	0.64%
SD-6	12"	18'	0.43%
SD-7	12"	81'	0.93%

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-8	12"	108'	0.57%
SD-9	12"	15'	0.91%
SD-10	12"	9'	1.81%
SD-12	12"	37'	1.49%
SD-13	12"	14'	12.48%
SD-14	12"	18'	8.42%

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	61.15	56.85 (SD-2)	56.75 (SD-1)	48"
CB-2	61.90		57.90 (SD-2)	48"
CB-3	60.80	56.85 (SD-4)	56.75 (SD-3)	48"
CB-4	61.25		58.00 (SD-4)	48"
CB-5	57.64	54.20 (SD-6)	54.20 (SD-5)	48"
CB-6	57.84	55.50 (SD-7)	54.40 (SD-6)	48"
CB-7	60.74	56.20 (SD-8)	56.10 (SD-7)	48"
CB-8	60.80		56.80 (SD-8)	48"
CB-9	51.40		46.40 (SD-9)	48"
CB-10	51.40	46.20 (SD-9)	46.10 (SD-10)	48"
CB-11	55.00	51.67 (6" UD)	51.07 (SD-12)	24" F-BASIN
CB-12	57.40	53.67 (6" UD)	53.57 (SD-13)	24" F-BASIN
CB-13	58.75	53.07 (6" UD)	52.57 (SD-14)	24" F-BASIN

SANITARY SEWER STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
SMH-1	51.60	47.10 (S-1)		48"
SMH-2	54.11	48.55 (S-2)	48.45 (S-1)	48"
SMH-3	54.83	58.50 (S-3)	58.40 (S-2)	48"

SANITARY SEWER PIPE DATA

NAME	SIZE	LENGTH	SLOPE
S-1	6"	30'	3.93%
S-2	6"	254'	3.82%
S-3	6"	80'	0.006%

PROGRESS PRINT

STATE OF MAINE — SHAWN M. FRANK — No. 6386 — REGISTERED PROFESSIONAL ENGINEER — 8/27/18

SHAWN M. FRANK, PE 6386

DESIGNED	CHECKED
SMF	SMF

REV.#	BY*	DATE*	STATUS
B	SMF	8/27/18	REVISED PER CITY COMMENTS
A	SMF	7/13/18	ISSUED TO CITY

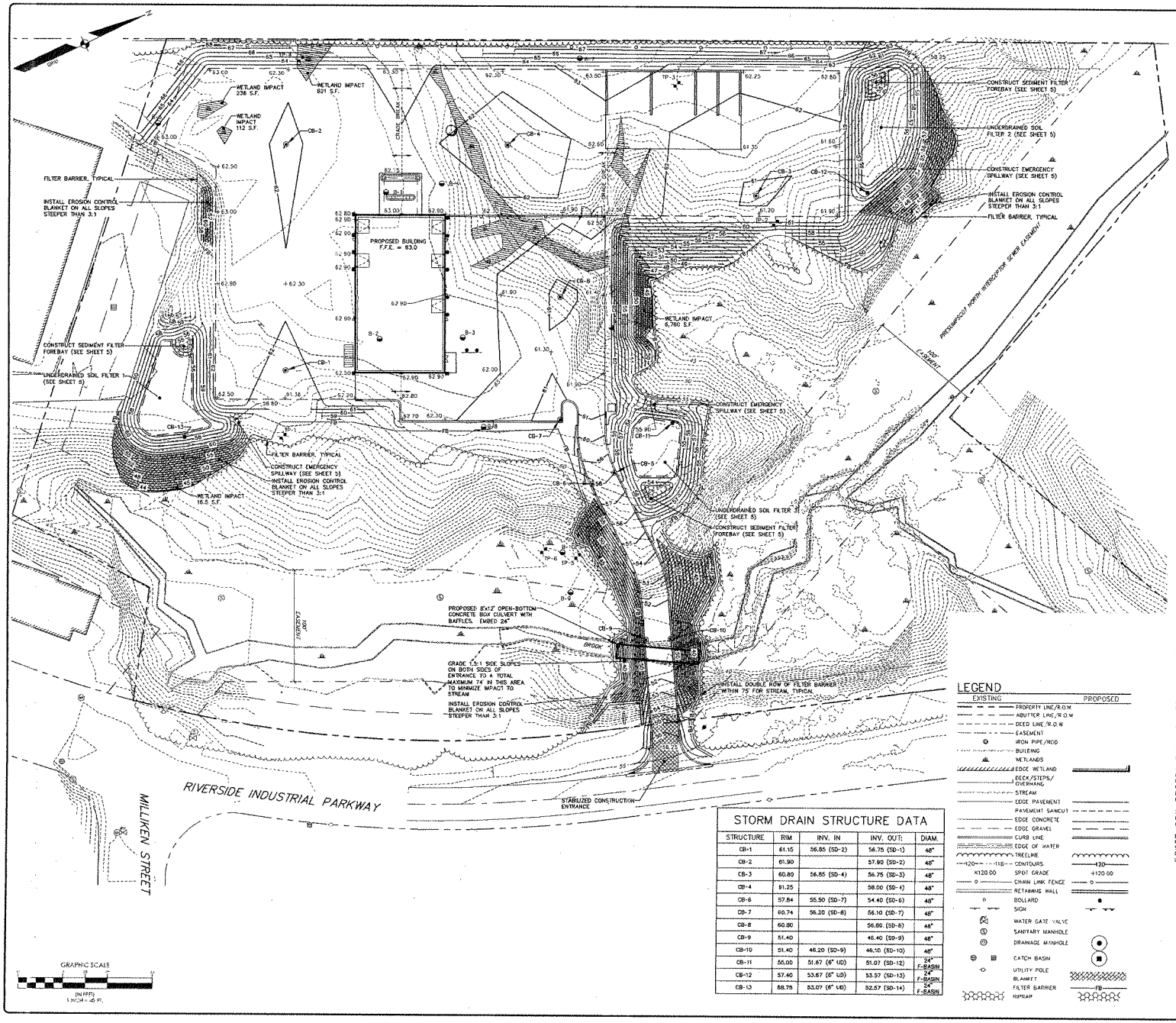
*THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS TO THIS PLAN SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
75 John Roberts Rd.
South Portland, ME 04106
Tel: 207-200-2100
WWW.SEBAGOTECHNICS.COM

UTILITY PLAN
OF
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR:
TWO EISENHOWER DRIVE, LLC
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 40'

SHEET 4 OF 12



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25. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. ANY MODIFICATION TO SUIT FIELD DIMENSION AND CONDITION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY WORK.
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27. ALL SUBSURFACE UTILITY LINES SHOWN HEREON ARE BASED SOLELY ON THE FIELD LOCATION OF VISIBLE STRUCTURES, SMH'S, CB'S, HYDRANTS, ETC. IN CONJUNCTION WITH DESIGN AND OR AS-BUILT PLANS SUPPLIED TO SEBAGO TECHNICS INC BY OTHERS PRIOR TO ANY CONSTRUCTION, EXCAVATION, TEST BORINGS, DRILLING, ETC., DIG SAFE MUST BE NOTIFIED AND A SITE IDENTIFICATION NUMBER ALONG WITH A SAFE TO DIG DATE OBTAINED. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING THE LOCATION, DEPTH AND MATERIAL OF ALL SUBSURFACE UTILITY LINES SHOWN HEREON AND ANY AND ALL OTHERS LOCATED ON SITE WITHIN THE CONSTRUCTION AREA.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	61.15	56.85 (SD-2)	56.75 (SD-1)	48"
CB-2	61.90		57.90 (SD-2)	48"
CB-3	60.80	56.85 (SD-4)	56.75 (SD-3)	48"
CB-4	61.25		58.00 (SD-4)	48"
CB-6	57.84	55.50 (SD-7)	54.40 (SD-6)	48"
CB-7	60.74	56.20 (SD-8)	56.10 (SD-7)	48"
CB-8	60.80		56.80 (SD-8)	48"
CB-9	51.40		46.40 (SD-9)	48"
CB-10	51.40	46.20 (SD-9)	46.10 (SD-10)	48"
CB-11	55.00	51.67 (6" UD)	51.07 (SD-12)	24" F-BASIN
CB-12	57.40	53.67 (6" UD)	53.57 (SD-13)	24" F-BASIN
CB-13	58.75	53.07 (6" UD)	52.57 (SD-14)	24" F-BASIN

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER LINE/R.O.W.	
DEED LINE/R.O.W.	
EASEMENT	
IRON PIPE/ROD	
BUILDING	
WETLANDS	
EDGE WETLAND	
DECK/STEPS/ OVERHANG	
STREAM	
EDGE PAVEMENT	
PAVEMENT SAWCUT	
EDGE CONCRETE	
EDGE GRAVEL	
CURB LINE	
EDGE OF WATER	
TREELINE	
120 CONTOURS	120
X120.00 SPOT GRADE	+120.00
CHAIN LINK FENCE	
RETAINING WALL	
BOLLARD	
SIGN	
WATER GATE VALVE	
SANITARY MANHOLE	
DRAINAGE MANHOLE	
CATCH BASIN	
UTILITY POLE	
BLANKET	
FILTER BARRIER	FB
RIPRAP	

PROGRESS PRINT

STATE OF MAINE SHAWN M. FRANK 6/27/18 PROFESSIONAL ENGINEER

SHAWN M. FRANK, PE 6366

DESIGNED	CHECKED
SAH	SMF

REV	BY	DATE	STATUS
B	SMF	6-27-18	REVISED PER CITY COMMENTS
A	SMF	7-13-18	ISSUED TO CITY

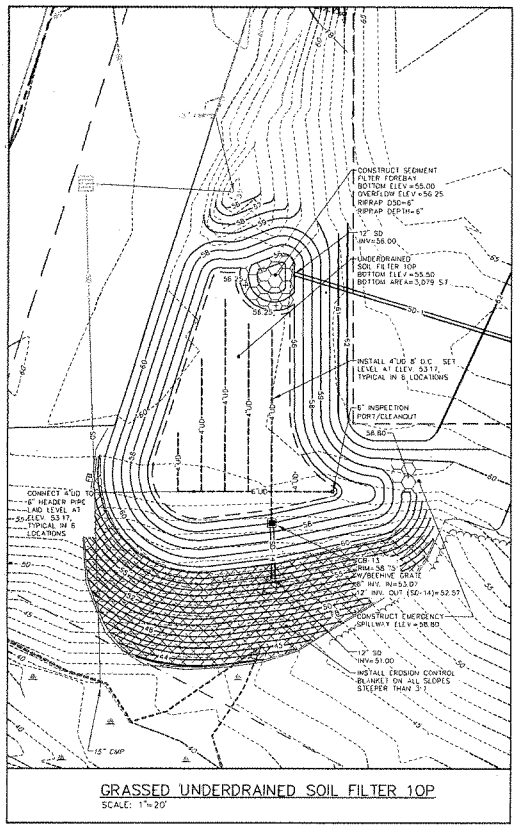
THIS PLAN SHALL NOT BE ALTERED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. AND ALTERATIONS AUTHORIZED BY OTHERWISE SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS INC.

SEBAGO TECHNICS INC
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd
Suite B
South Portland, ME 04106
Tel: 207-200-2100

GRADING AND EROSION CONTROL PLAN
OF:
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 4750
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 40'

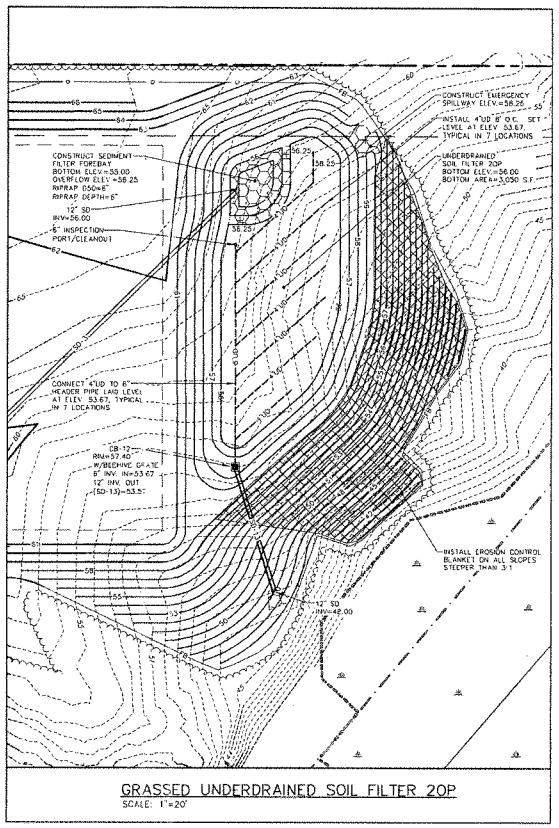
SHEET 5 OF 12



GRASSED UNDERDRAINED SOIL FILTER 10P
SCALE: 1"=20'

STORM DRAIN STRUCTURE DATA				
STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-13	58.75	53.67 (6" UD)	52.57 (SD-14)	24" F-BASIN

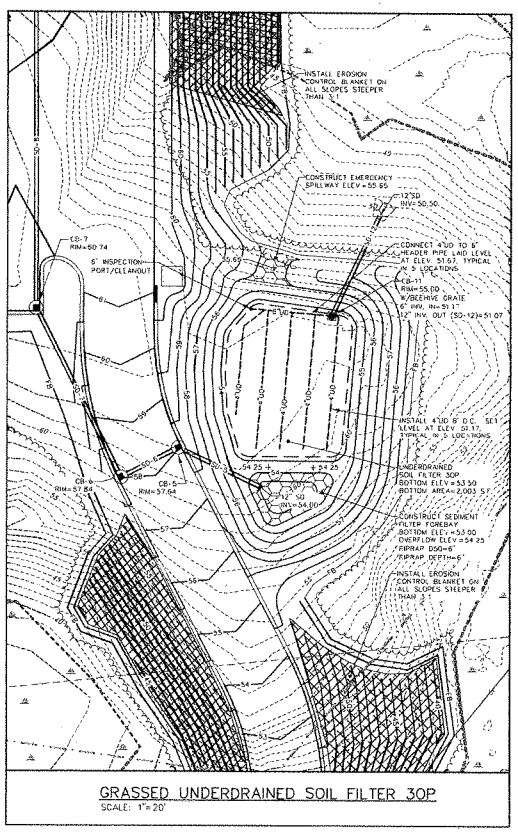
STORM DRAIN PIPE DATA			
NAME	SIZE	LENGTH	SLOPE
SD-1	12"	84'	0.87%
SD-14	12"	18'	8.42%



GRASSED UNDERDRAINED SOIL FILTER 20P
SCALE: 1"=20'

STORM DRAIN STRUCTURE DATA				
STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-12	57.40	53.67 (6" UD)	53.57 (SD-13)	24" F-BASIN

STORM DRAIN PIPE DATA			
NAME	SIZE	LENGTH	SLOPE
SD-3	12"	139'	0.53%
SD-13	12"	44'	12.48%



GRASSED UNDERDRAINED SOIL FILTER 30P
SCALE: 1"=20'

STORM DRAIN STRUCTURE DATA				
STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-5	57.64	54.30 (SD-6)	54.20 (SD-5)	48"
CB-6	57.84	55.50 (SD-7)	54.40 (SD-6)	48"
CB-7	60.74	56.20 (SD-8)	56.10 (SD-7)	48"
CB-11	55.00	51.67 (6" UD)	51.07 (SD-12)	24" F-BASIN

STORM DRAIN PIPE DATA			
NAME	SIZE	LENGTH	SLOPE
SD-5	12"	29'	0.64%
SD-6	12"	18'	0.45%
SD-7	12"	61'	0.93%
SD-8	12"	108'	0.57%
SD-12	12"	37'	1.48%

GENERAL POND CONSTRUCTION NOTES:

1. INSTALL HAY BALE BARRIER AROUND ALL CATCH BASINS NOT IN PAVEMENT
2. SEE DETAIL SHEETS FOR EROSION CONTROL NOTES.
3. SOIL STOCKPILES SHALL NOT BE LOCATED WITHIN 100 FEET OF ANY NATURAL RESOURCES. STOCKPILES SHALL BE CONTAINED WITH A DOUBLE BOUNDARY OF FILTRATION BARRIER. SEE EROSION CONTROL NOTES.
4. PIPE MATERIALS:
   a) STORM DRAIN: SMOOTH WALL CORRUGATED HDPE
   b) UNDER DRAIN: 6" PERFORATED HDPE
   c) SANITARY SEWER: SDR-35 HDPE
5. SEE DETAIL SHEETS FOR ADDITIONAL DETAILS

GENERAL NOTES:

1. BORINGS SHOWN ARE REFERENCED FROM A REPORT, 14-0209 DATED MAY 7, 2014, GEOTECHNICAL ENGINEERING SERVICES, PROPOSED CONDOMINIUM DEVELOPMENT PHASE II (WOODS EDGE) AND PHASE III (RIDGEFIELD), FOR HILL ROAD, GORHAM, MAINE. REPORT WAS PREPARED BY S.W. COLE ENGINEERING SERVICES, INC. BY MICHAEL ST. PIERRE, GEOTECHNICAL ENGINEER, MAINE PE #12319. THE REPORT ALSO INCLUDES SUBSURFACE DATA AND NARRATIVE OF THE FINDINGS AND RECOMMENDATIONS.

LEGEND

EXISTING		PROPOSED
120 / 118	CONTOURS	120
X120.00	SPOT GRADE	+120.00
SD	STORM DRAIN	SD
UD	UNDER DRAIN	UD
	DRAINAGE MANHOLE	
	CATCH BASIN	
	EDGE WETLAND	
	WETLANDS	

GRAPHIC SCALE
1" = 20'

SHAWN M. FRANK, PE 6396

PROGRESS PRINT

STATE OF MAINE SHAWN M. FRANK No. 6396 REGISTERED PROFESSIONAL ENGINEER 07/13/18

DESIGNED	CHECKED
SAH	SMF

REV.	BY	DATE:	STATUS:
A	SMF	7-13-18	ISSUED TO CITY

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POND CONSTRUCTION PLANS
OF
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR
TWO EISENHOWER DRIVE, LLC
TWO EISENHOWER DRIVE
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 20'

SHEET 6 OF 12

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.

PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROWS. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

DURING CONSTRUCTION

1. INSPECTION AND CORRECTIVE ACTION:
INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.

2. MAINTENANCE:
IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPS OR SIGNIFICANT REPAIR OF BMPS ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

3. DOCUMENTATION:
KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN.

THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

POST-CONSTRUCTION

1. PLAN:
CARRY OUT AN APPROVED INSPECTION AND MAINTENANCE PLAN THAT IS CONSISTENT WITH THE MINIMUM REQUIREMENTS OF THIS SECTION. THE PLAN MUST ADDRESS INSPECTION AND MAINTENANCE OF THE PROJECT'S PERMANENT EROSION CONTROL MEASURES AND STORMWATER MANAGEMENT SYSTEM. THIS PLAN MAY BE COMBINED WITH THE PLAN LISTED IN SECTION 2(A) OF THIS APPENDIX. SEE SECTION 7(C)(2) FOR SUBMISSION REQUIREMENTS

2. INSPECTION AND MAINTENANCE:
ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS. THE FOLLOWING AREAS, FACILITIES, AND MEASURES MUST BE INSPECTED AND IDENTIFIED DEFICIENCIES MUST BE CORRECTED. AREAS, FACILITIES, AND MEASURES OTHER THAN THOSE LISTED BELOW MAY ALSO REQUIRE INSPECTION ON A SPECIFIC SITE. INSPECTION OR MAINTENANCE TASKS OTHER THAN THOSE DISCUSSED BELOW MUST BE INCLUDED IN THE MAINTENANCE PLAN DEVELOPED FOR A SPECIFIC SITE.

3. REGULAR MAINTENANCE:
CLEAR ACCUMULATIONS OF WINTER SAND IN PARKING LOTS AND ALONG ROADWAYS AT LEAST ONCE A YEAR, PREFERABLY IN THE SPRING. ACCUMULATIONS ON PAVEMENT MAY BE REMOVED BY PAVEMENT SWEEPING. ACCUMULATIONS OF SAND ALONG ROAD SHOULDERS MAY BE REMOVED BY GRADING EXCESS SAND TO THE PAVEMENT EDGE AND REMOVING IT MANUALLY OR BY A FRONT-END LOADER. GRADING OF GRAVEL ROADS, OR ADDING LAYERS OF GRAVEL OR PAVED ROADS, MUST BE ROUTINELY PERFORMED TO ENSURE THAT STORMWATER DRAINS IMMEDIATELY OFF THE ROAD SURFACE TO ADJACENT BUFFER AREAS OR STABLE DITCHES, AND IS NOT IMPEDED BY ACCUMULATIONS OF GRADED MATERIAL ON THE ROAD SHOULDER OR BY EXCAVATION OF FALSE DITCHES IN THE SHOULDER. IF WATER BARS OR OPEN-TOP CULVERTS ARE USED TO DIVERT RUNOFF FROM ROAD SURFACES, CLEAN OUT ANY SEDIMENTS WITHIN OR AT THE OUTLET OF THESE STRUCTURES TO RESTORE THEIR FUNCTION

4. DOCUMENTATION:
KEEP A LOG (REPORT) SUMMARIZING INSPECTIONS, MAINTENANCE, AND ANY CORRECTIVE ACTIONS TAKEN. THE LOG MUST INCLUDE THE DATE ON WHICH EACH INSPECTION OR MAINTENANCE TASK WAS PERFORMED, A DESCRIPTION OF THE INSPECTION FINDINGS OR MAINTENANCE COMPLETED, AND THE NAME OF THE INSPECTOR OR MAINTENANCE PERSONNEL PERFORMING THE TASK. IF A MAINTENANCE TASK REQUIRES THE CLEAN-OUT OF ANY SEDIMENTS OR DEBRIS, INDICATE WHERE THE SEDIMENT AND DEBRIS WAS DISPOSED AFTER REMOVAL. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY PROVIDED TO THE DEPARTMENT UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST FIVE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

EROSION CONTROL APPLICATIONS & MEASURES

THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE ACCOMPLISHED IN ACCORDANCE WITH GUIDELINES ESTABLISHED WITHIN THE CURRENT MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION CHAPTER 500 RULES. THE DEPARTMENTS BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS ON THE PLAN SET. EROSION CONTROL MEASURES MUST BE IN PLACE BEFORE THE ACTIVITY BEGINS. MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED. ADEQUATE AND TIMELY TEMPORARY AND PERMANENT STABILIZATION MEASURES MUST BE TAKEN.

1. POLLUTION PREVENTION:
WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREA TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREA TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 48 HOURS.

2. TEMPORARY MULCHING:
ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 7 DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 15%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION SECTION, BELOW).
TYPES OF MULCH
HAY OR STRAW SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).
EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 150 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES. EROSION CONTROL MIX ON SLOPES STEEPER THAN 2:1 SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.
EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

3. SOIL STOCKPILES:
STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE. EROSION CONTROL MIX THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

4. NATURAL RESOURCES PROTECTION:
ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE STABILIZED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1 OF THIS SECTION) OR OTHER NON-ERODIBLE COVER WITHIN 48 HOURS OF EXPOSURE OR PRIOR TO ANY STORM EVENT (SEDIMENT BARRIERS (AS DESCRIBED IN PART 4 OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. IF DISTURBANCE TAKES PLACE LESS THAN 30 FEET FROM A PROTECTED RESOURCE AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TO THE RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED.

5. SEDIMENT BARRIERS:
PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT ADJACENT PROPERTIES AND WATERS FROM SEDIMENT DURING CONSTRUCTION AND UNTIL THE CONTRACTOR IS SATISFIED THAT ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED IN A SHALLOW TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

EROSION CONTROL MIX: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL, AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

6. TEMPORARY CHECK DAMS:
SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 85%-90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: WE DO NOT RECOMMEND THE USE OF HAY BALES AS CHECK DAMS.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

1. STORMDRAIN INLET PROTECTION:
INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLET OR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. ANY SWALE BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE UNDERMINEMENT OR DAMAGE TO ADJACENT AREAS OR STRUCTURES

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS

2. STABILIZED CONSTRUCTION EXIT:
PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.

3. DUST CONTROL:
DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE.

4. TEMPORARY VEGETATION:
TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

5. PERMANENT VEGETATION:
REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:
A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE PLANT MATERIAL

B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS /1,000 S.F
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS /1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:
A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS (MDEP SEED MIX 2 IS DISPLAYED)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	0.46 LBS /1,000 S.F. (20 LBS/ACRE)
REDTOP	0.05 LBS/1,000 S.F. (2 LBS/ACRE)
TALL FESCUE	0.46 LBS /1,000 S.F. (20 LBS/ACRE)
TOTAL	0.97 LBS /1,000 S.F. (42 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH SEED. RECOMMENDED SEED MIXTURES ARE THE SAME AS ABOVE BUT MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS

SODDING

FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES. AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW. STAGGER THE STRIPS AT THE LOWER ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION

WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 8% (1:SH:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET. LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 20 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR 0° WINTER PROTECTION AS DESCRIBED IN ITEM 2(C) OF THIS STANDARD.

B. STABILIZE THE SOIL WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).

C. STABILIZE THE SLOPE WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF EROSION CONTROL MIX ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. DO NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 1H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.

D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 8%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTION'S TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET. LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 20 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR 0° WINTER PROTECTION AS DESCRIBED IN ITEM 2(C) OF THIS STANDARD.

B. STABILIZE THE SOIL WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

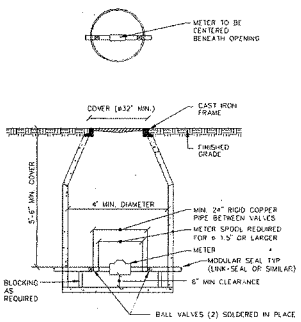
C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

D. STABILIZE THE SOIL WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A MINIMUM TWO-INCH LAYER OF EROSION CONTROL MIX ON THE SOIL BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE.

CONSTRUCTION SCHEDULE

SITE IMPROVEMENTS WILL MOST LIKELY BEGIN IN _____ DEPENDING UPON FINAL PROJECT APPROVAL. THE FOLLOWING SCHEDULE IS ANTICIPATED:

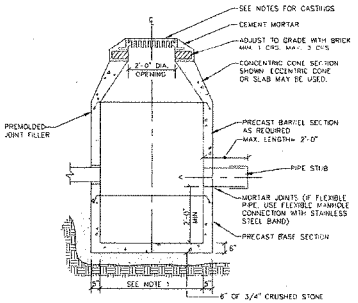
1.	ESTIMATED CONSTRUCTION TIME:	-- MONTHS
2.	EROSION CONTROL MEASURES PLACED	WEEK 1 - WEEK 2
3.	SITE CLEARING AND GRUBBING	WEEK 2 - WEEK 3
4.	CONSTRUCTION OF ROAD SUBBASE FOR ACCESS	WEEK 5 - WEEK 13
5.	STORMWATER MANAGEMENT AREA CONSTRUCTION	WEEK 7 - WEEK 8
6.	UTILITY IMPROVEMENTS AND ROADWAY CONSTRUCTION	WEEK 7 - WEEK 24
7.	MULCH SPREAD FOR EROSION CONTROL	--



METER PIT AND COVER NOTES:

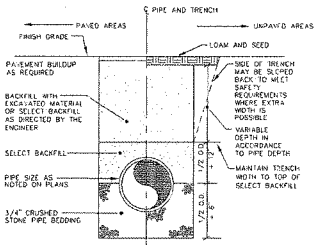
1. THE METER PIT SHALL BE SUPPLIED AND INSTALLED BY THE CUSTOMER AND SHALL BE LOCATED ON PRIVATE PROPERTY BETWEEN 10'-0" AND 20'-0" FROM THE PROPERTY LINE
2. THE METER PIT SHALL BE MADE OF PRECAST CONCRETE OF SUFFICIENT SIZE TO PROVIDE 5'-7" MINIMUM GROUND COVER FROM FINISHED GRADE TO THE TOP OF THE SERVICE PIPE. ANY SEAMS BETWEEN CONCRETE SECTIONS SHALL BE SEALED WITH MASTIC JOINT. ALL OPENINGS IN THE CONCRETE FOR SERVICE PIPING SHALL BE SEALED WITH A MODULAR SEAL (LINK-SEAL OR SIMILAR)
3. THE INTERIOR OF THE METER PIT SHALL BE A MINIMUM OF 4'-0" IN DIAMETER AND THE METER PIT OPENING SHALL BE A MINIMUM OF 30" IN DIAMETER WITH A CAST IRON FRAME. THE METER PIT COVER SHALL BE CAST IRON 32" MINIMUM IN DIAMETER, AND BE WETHER PERMANENTLY LABELED "WATER" OR HAVE NO LABEL. ANY STEEL PLATE MATERIAL SHALL BE COATED WITH A RUST INHIBITOR PAINT.
4. WALL-MOUNTED LADDER RUNGS SHOULD NOT BE INSTALLED WITHIN METER PIT.
5. ALL PIPING INSIDE AND EXTENDING THROUGH THE METER PIT SHALL BE MADE OF COPPER, WITH A MINIMUM OF 5" CLEARANCE FROM THE METER PIT FLOOR. BLOCKING SHALL BE INSTALLED AS REQUIRED TO SUPPORT THE PIPE.
6. CUSTOMER SHALL ENSURE THE METER PIT AND COVER ARE PROPERLY RATED FOR TRAFFIC FLOW IF APPLICABLE.
7. ONLY PORTLAND WATER DISTRICT PERSONNEL ARE AUTHORIZED TO INSTALL WATER METERS. PORTLAND WATER DISTRICT PERSONNEL WILL BE ADDITIONALLY AUTHORIZED TO OPERATE METER VALVES AS NEEDED FOR INSTALLATION AND MAINTENANCE.
8. PORTLAND WATER DISTRICT WILL SUPPLY THE WATER METER AND NECESSARY FITTINGS FOR INSTALLATION. IF REQUIRED, A FLANGED METER SPOOL WILL BE AVAILABLE FOR CUSTOMER PICKUP AT DOUGLASS STREET CUSTOMER SERVICE AND MUST BE INSTALLED BY CUSTOMER PRIOR TO METER SET. ALL OTHER MATERIALS INCLUDING VALVES, SHALL BE SUPPLIED AND INSTALLED BY THE CUSTOMER.
9. CUSTOMER WILL INSTALL TWO (2) BALL VALVES 24" APART FOR METER INSTALLATION ALLOWING FOR THE WATER METER TO BE CENTERED UNDER THE METER PIT OPENING. BALL VALVES SHALL BE SOLDERED IN PLACE FOR A SERVICE PIPE WITH A DIAMETER OF 1" OR LESS. CUSTOMER WILL INSTALL RIGID COPPER PIPE (24" MINIMUM) BETWEEN THE BALL VALVES.
10. FOR PIPING WITH A DIAMETER OF 1-1/2" OR LARGER, THE CUSTOMER WILL OBTAIN A FLANGED METER SPOOL PIECE FROM THE PORTLAND WATER DISTRICT. THE CUSTOMER IS RESPONSIBLE FOR ENSURING THAT THE SPOOL PIECE IS INSTALLED PRIOR TO METER INSTALLATION.
11. THE METER PIT MAY HOUSE UP TO TWO 5/8", 3/4" OR 1" METERS. INSTALLATION OF MULTIPLE METERS IN A METER PIT MUST RECEIVE PRIOR APPROVAL FROM THE PORTLAND WATER DISTRICT.

TYPICAL METER PIT (2" METERS)
NOT TO SCALE

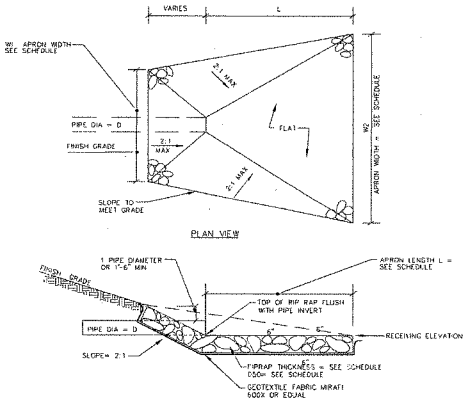


NOTES:
1. 4'-0" I.D. TYPICAL. SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS
4. CATCH BASIN FRAME AND GRATE TO BE NEENAH FOUNDRY R-2554, OR APPROVED EQUAL

TYPICAL CATCH BASIN
NOT TO SCALE



TYPICAL TRENCH SECTION
NOT TO SCALE

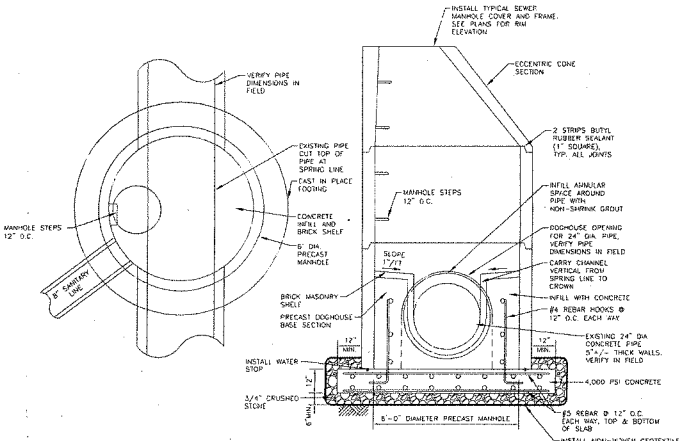


NOTES
1. RIPRAP TO BE PROCESSED ANGULAR ROCK
2. RIPRAP GRADATION SHALL BE A WELL GRADED MIX FROM ABOUT 1.5 TIMES D SIZE TO 25 PERCENT OF THE D SIZE
3. THE RIPRAP STONES SHALL BE CAREFULLY PLACED FROM THE TOE OF THE SLOPE UPWARD
4. STONES SHALL BE LOWERED TO THE SLOPE AND NOT BE ALLOWED TO DROP MORE THAN 12" ONTO THE GEOTEXTILE
5. THE FINISHED SURFACE SHALL BE A RELATIVELY SMOOTH, UNIFORMLY SLOPED SURFACE

TYPICAL RIPRAP APRON SCHEDULE

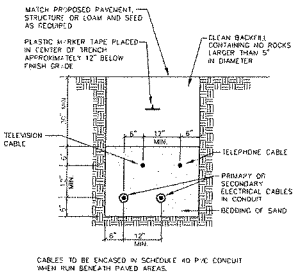
CULVERT DIAMETER - D (IN.)	APRON LENGTH - L (FT.)	WIDTH - W1 (FT.)	WIDTH - W2 (FT.)	RIPRAP D50 (IN.)	RIPRAP THICKNESS (IN.)
12	8	3	9	5	14
15	10	4	12	6	14
18	13	5	15	7	18
24	18	8	20	8	18
36	29	9	32	11	25
42	33	11	37	12	27
48	38	12	43	16	36

RIPRAP APRON
NOT TO SCALE



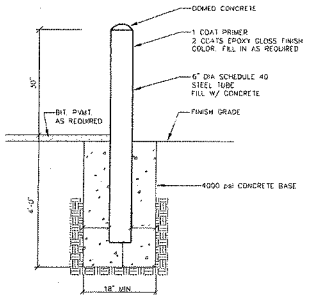
NOTES:
1. CUT EXISTING PIPE AND REMOVE TOP HALF OF PIPE PRIOR TO CONSTRUCTING BRICK SHELF
2. ALL BACKFILL WITHIN 3' OF STRUCTURE SHALL BE GRANULAR BORROW PLACED IN 8" LIFTS COMPACTED TO 95% OPTIMUM DENSITY.
3. VERIFY PIPE DIMENSIONS IN FIELD AND SUBMIT SHOP DRAWINGS FOR ENGINEER'S APPROVAL

DOGHOUSE MANHOLE
NOT TO SCALE

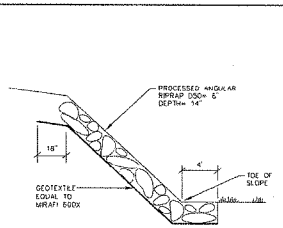


CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT WHEN RUN BENEATH PAVED AREAS.

TYPICAL UNDERGROUND CABLE INSTALLATION
NOT TO SCALE



METAL BOLLARD
NOT TO SCALE



SIDE SLOPE RIPRAP
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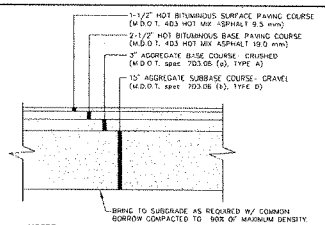
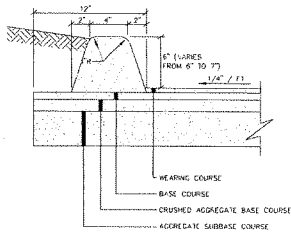


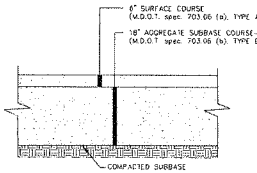
NOTES:
1. COMPACT GRAVEL SUBBASE, BASE COURSE TO 92% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE
3. CONTRACTOR MAY REPLACE BITUMINOUS PAVING SECTION WITH TWO (2) 1-1/2" LIFTS OF 12.5mm SUPERPAVE MIX. SUBMIT PAVEMENT MIX DESIGN PRIOR TO CONSTRUCTION

TYP. PAVED PARKING LOT SECTION
NOT TO SCALE

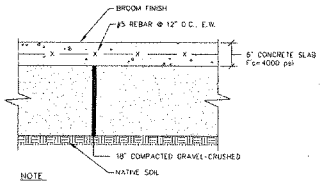


(SEE TYPICAL ROAD SECTION FOR MATERIAL SPECIFICATIONS AND DEPTHS)

BITUMINOUS CURB SECTION
NOT TO SCALE

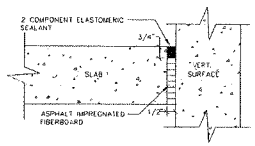


TYP. GRAVEL PARKING AREA
NOT TO SCALE



NOTE
1. PROVIDE CONTRACTION CONTROL JOINTS EVERY 6' IN EACH DIRECTION

TYPICAL CONCRETE SLAB
NOT TO SCALE



ISOLATION JOINT
NOT TO SCALE

PROGRESS PRINT

SHAWN M. FRANK, PE, 6326
STATE OF MAINE — SHAWN M. FRANK — No. 6326 — REGISTERED PROFESSIONAL ENGINEER
07/13/18

DESIGNED	CHECKED
SAH	SMF

REV'D	BY	DATE	STATUS
A	SMF	7-13-18	ISSUED TO CITY

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75 John Roberts Rd
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

DETAILS
OF
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16380	N.T.S.

SHEET 8 OF 12

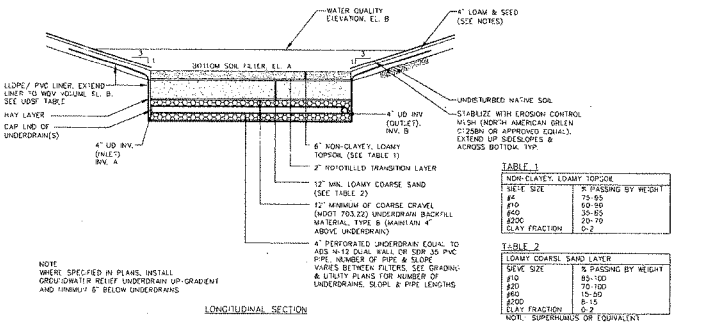


TABLE 1

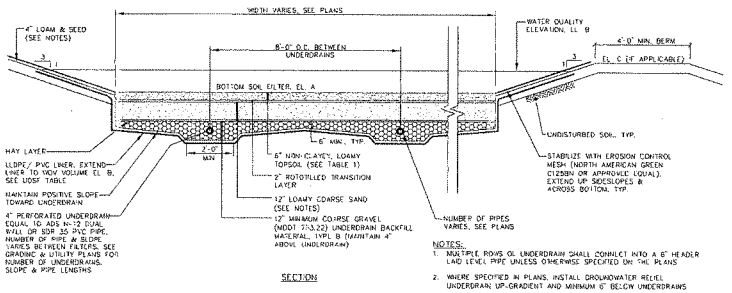
NON-CLAYEY, LOAMY TOPSOIL	
SIEVE SIZE	% PASSING BY WEIGHT
#4	75-95
#10	60-80
#40	35-65
#200	20-70
CLAY FRACTION	0-2

TABLE 2

LOAMY COARSE SAND LAYER	
SIEVE SIZE	% PASSING BY WEIGHT
#10	85-100
#20	70-100
#60	15-30
#200	5-15
CLAY FRACTION	0-2

NOTE: SUPERNAVAUS OR EQUIVALENT

LONGITUDINAL SECTION



NOTES:
1. MULTIPLE ROWS OF UNDERDRAIN SHALL CONNECT INTO A 6" HEADER LAID LEVEL PIPE UNLESS OTHERWISE SPECIFIED ON THE PLANS
2. WHERE SPECIFIED IN PLANS, INSTALL GROUNDWATER RELIEF UNDERDRAIN UP-GRADIENT AND MINIMUM 6" BELOW UNDERDRAINS

SECTION

UNDERDRAINED SOIL FILTER DETAIL
NOT TO SCALE

UNDERDRAINED SOIL FILTER CONSTRUCTION OVERSIGHT NOTES:

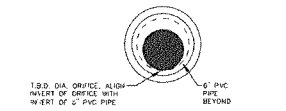
THE APPLICANT WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE UNDERDRAIN, IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE UNDERDRAIN'S CONSTRUCTION PLAN FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, AND THE ITEMS INSPECTED ON EACH VISIT, AND INCLUDE ANY TESTING DATA OR SIEVE ANALYSIS DATA ON EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE.

1. CONSTRUCTION SEQUENCE: THE UNDERDRAIN AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE UNDERDRAIN HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, SOD, VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
2. COMPACTION OF UNDERGRADE: UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR. THE BED SHOULD BE INSTALLED IN AT LEAST 2 LIFTS OF 6 INCHES TO PREVENT POCKETS OF LOOSE MEDIA.
3. CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:
   A. FOR FIRST UNDERDRAIN CONSTRUCTED, AFTER UNDERDRAIN PIPE IS INSTALLED AT GRADE, AND BUT NOT BACKFILLED. AFTER THE UNDERDRAIN PIPE IS COMPLETELY BACKFILLED AND BEFORE PLACEMENT OF LOAMY COARSE SAND LAYER
   B. AFTER THE LOAMY COARSE SAND LAYER AND SOD/ LOAM HAS BEEN INSTALLED.
   C. AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
   D. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE UNDERDRAIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY.

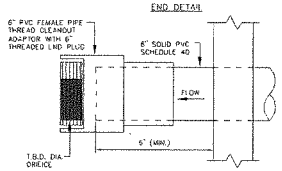
TESTING AND SUBMITTALS
1. THE UNDERDRAIN SHALL CONSIST OF THE TOP THREE LAYERS IDENTIFIED AS LOAMY TOPSOIL, 2" TRANSITION AND 12" LOAMY COARSE SAND. THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE FOR EACH COMPONENT OF THE UNDERDRAIN AND SUBMIT GRADATIONS FOR THE UNDERDRAIN MATERIALS TO THE ENGINEER FOR APPROVAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.

UNDERDRAINED SOIL FILTER MATERIAL NOTES:

1. ONSITE LOAM SHALL BE SCREENED FOR STONES LARGER THAN 1 INCH AND BE TESTED TO VERIFY THERE IS LESS THAN 2% CLAY CONTENT AND 5-8% ORGANIC MATTER. IF ONSITE LOAM DOES NOT MEET REQUIREMENTS, THEN LOAM FROM OFFSITE SHALL BE A NON-CLAYEY, LOAMY TOPSOIL SUCH AS A USDA SANDY LOAM TOPSOIL WITH 5-8% HUMIFIED ORGANIC MATTER AND 3-10% CLAY CONTENT.
2. 2" TRANSITION LAYER OF THE LOAM/SOD LAYER SHALL BE ROTOTILLED INTO THE LOAMY COARSE SAND LAYER BELOW.
3. THE LOAMY COARSE SAND LAYER SHALL BE TESTED IN ACCORDANCE WITH THE TESTING AND SUBMITTALS NOTES ABOVE.
4. A LAYER OF HAY SHALL BE PLACED BETWEEN 12" LOAMY COARSE LAYER AND UNDERDRAIN STONE BEDDING TO PREVENT SUBSIDENCE OR PLUGGING OF THE SAND/GRAVEL/STONE LAYER AND/OR PIPE.
5. UNDERDRAIN STONE BEDDING MATERIAL MUST CONFORM TO THE MDOT SPECIFICATION 703.22 UNDERDRAIN TYPE B FOR UNDERDRAIN BACKFILL MATERIAL. THE BEDDING MATERIAL MUST HAVE NO MORE THAN 5% PASSING THE 200 SIEVE.
6. MATERIAL LAYERS ABOVE THE UNDERDRAIN BACKFILL LAYER SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS CAN BE MIXED WITHIN THE FILTER. DURING CONSTRUCTION, CARE SHOULD BE TAKEN TO AVOID COMPACTION OF BOTH THE GRAVEL AND SOIL FILTER.
7. OVER COMPACTION OF UNDERDRAIN MATERIAL SHALL BE AVOIDED. IF OVER COMPACTION OCCURS, ROTOTILL AGAIN PRIOR TO SEEDING OR SODDING

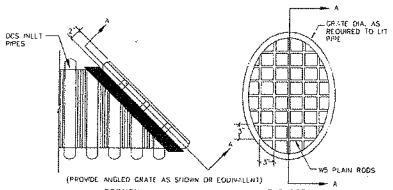


END DETAIL



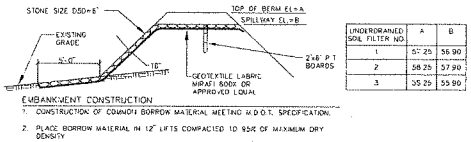
CONNECTION DETAIL

FLANGE ADAPTOR DETAIL
NOT TO SCALE



NOTES:
1. RODS CONFORM TO SECTION 709.1
2. 3/8" GRADE 304 STAINLESS STEEL BOLT AND NUT (4 EA.)
3. GRATE AND HARDWARE SHALL BE CONSTRUCTED OF ALUMINUM OR STAINLESS STEEL
4. ALTERNATIVE TO SCREEN: ADS DRAIN ADB12 OR APPROVED EQUAL

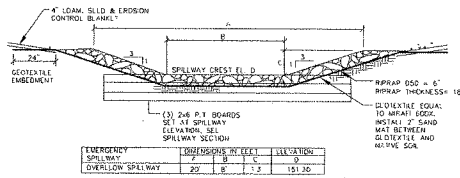
ANIMAL SCREEN DETAIL
NOT TO SCALE



UNDERDRAINED SOIL FILTER NO.	A	B
1	57.25	56.90
2	58.25	57.90
3	59.25	59.90

EMBANKMENT CONSTRUCTION
1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION.
2. PLACE BORROW MATERIAL IN 12" LIFTS COMPACTED TO 95% OF MAXIMUM DRY DENSITY
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN

SPILLWAY SECTION
NOT TO SCALE



EMERGENCY SPILLWAY	DIMENSIONS IN FEET			ELEVATION
	A	B	C	D
OVERFLOW SPILLWAY	20'	8'	1:3	151.20

EMERGENCY/ FOREBAY SPILLWAY CROSS-SECTION
NOT TO SCALE

PROGRESS PRINT

STATE OF MAINE — SHAWN M. FRANK — No. 9396 — REGISTERED PROFESSIONAL ENGINEER — 07/13/18

SHAWN M. FRANK, PE 9396

DESIGNED	CHECKED
SAH	SMF

REV'D	BY	DATE	STATUS
A	SMF	7.13.18	ISSUED TO CITY

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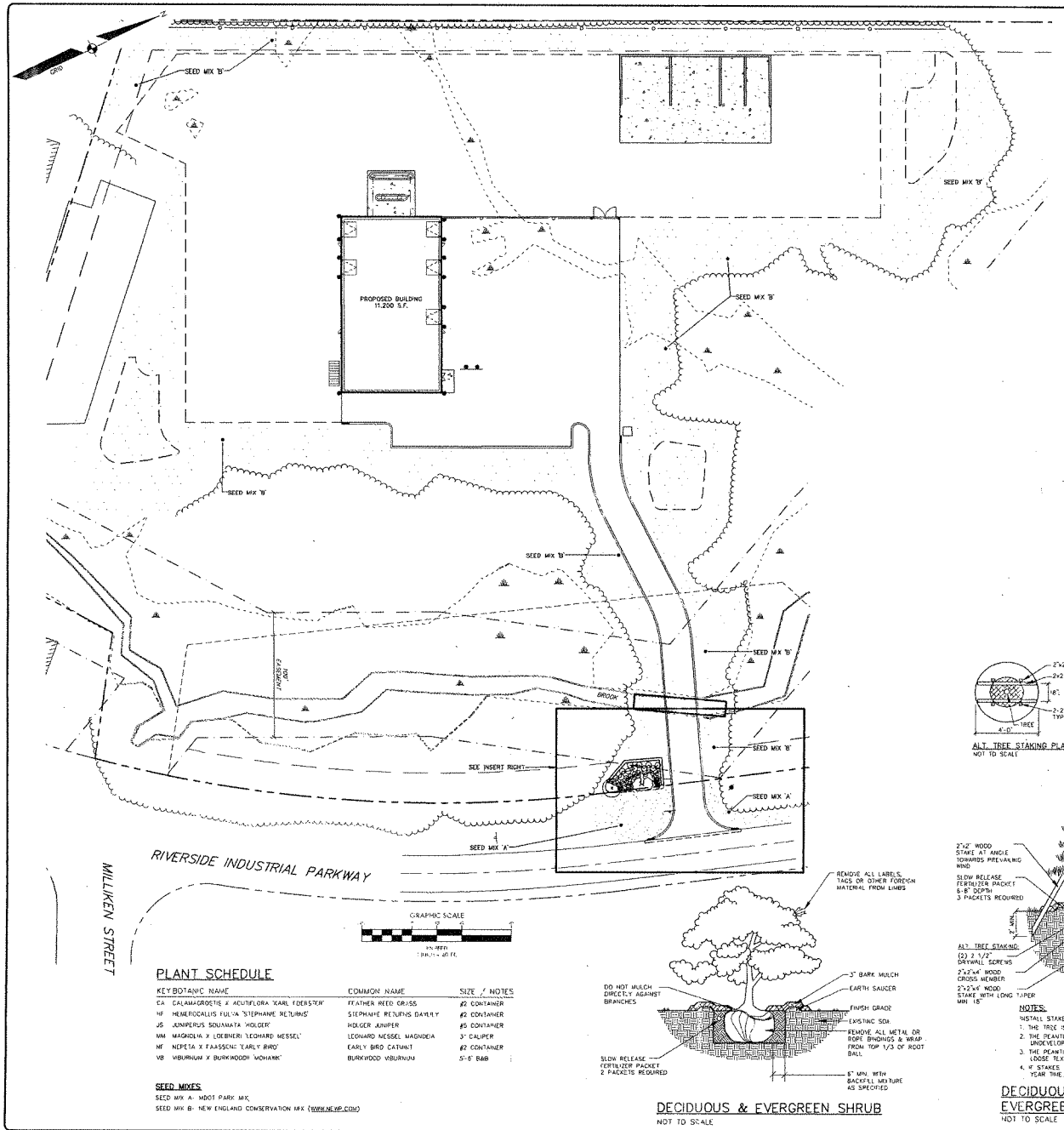
75 John Roberts Rd
Suite E
South Portland, ME 04106
Tel: 207-200-2100
WWW.SEBAGOTECHNICS.COM

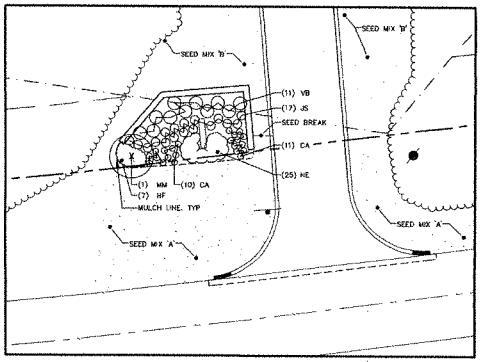
DETAILS
OF 250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE

FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1123
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	N.T.S.

SHEET 9 OF 12





INSERT:
SCALE: 1" = 20'

PLANT SCHEDULE

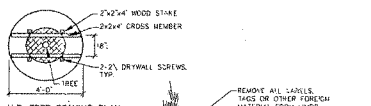
KEY	BOTANIC NAME	COMMON NAME	SIZE / NOTES
CA	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS	#2 CONTAINER
HF	HEMEROCALLIS FULVA 'STEPHANIE RETURNS'	STEPHANIE RETURNS DAYLILY	#2 CONTAINER
JS	JUNIPERUS SQUAMATA 'HOLGER'	HOLGER JUNIPER	#5 CONTAINER
MM	MAGNOLIA X LOEBNERI 'LEONARD MESSEL'	LEONARD MESSEL MAGNOLIA	3" CALIPER
NF	NEPETA X FAASSENII 'EARLY BIRD'	EARLY BIRD CATMINT	#2 CONTAINER
VB	VIBURNUM X BURKWOODII 'MOHAWK'	BURKWOOD VIBURNUM	5'-6' B&B

SEED MIXES

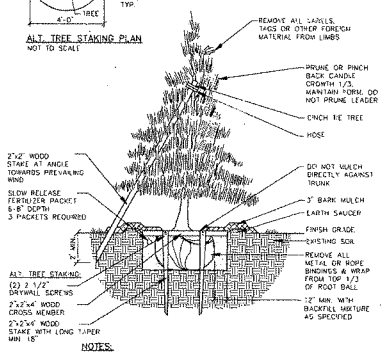
SEED MIX A- MDOT PARK MIX

SEED MIX B- NEW ENGLAND CONSERVATION MIX (WWW.NEWP.COM)

DECIDUOUS & EVERGREEN SHRUB
NOT TO SCALE



ALT. TREE STAKING PLAN
NOT TO SCALE



NOTES:

INSTALL STAKES AND GUYS TO TREES IF THE FOLLOWING APPLY:

1. THE TREE IS OF SUBSTANTIAL SIZE
2. THE PLANTING LOCATION IS EXTREMELY WINDY, AS ON OPEN UNDEVELOPED SITES.
3. THE PLANTING LOCATION IS COMPRISED OF SAND OR OTHER LOOSE TEXTURED SOILS.
4. IF STAKES AND GUYS ARE REQUIRED, REMOVE AFTER ONE YEAR TIME.

DECIDUOUS TREES — UNDER 3" CALIPER OR UNDER 8' IN HEIGHT
EVERGREEN TREES — 7'-0" IN HEIGHT & UNDER
NOT TO SCALE

LANDSCAPE NOTES

1. PLANT QUANTITIES SHOWN ON PLANT LISTS ARE FOR CONVENIENCE TO THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL INSTALLATION AS SHOWN ON PLANS.
2. SIZE AND GRADING STANDARDS OF PLANT MATERIALS SHALL CONFORM TO THE LATEST EDITION OF "U.S.A. STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
3. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
4. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE BY THE OWNER.
5. PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR BY THE CONTRACTOR AND A PERIOD OF TWO YEARS THEREAFTER BY THE OWNER FROM DATE OF INSTALLATION. DURING THE ONE YEAR GUARANTEE PERIOD, DEAD PLANT MATERIAL SHALL BE REPLACED AT NO COST TO THE OWNER, AT THE END OF THE ONE YEAR PERIOD, THE CONTRACTOR SHALL OBTAIN FINAL ACCEPTANCE FROM THE OWNER.
6. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
7. EXISTING TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
8. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF THE UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING ANY DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER.
9. ALL SHRUB BEDS SHALL BE MULCHED WITH 3" CLEAN SHREDDED DARK BROWN BARK MULCH.
10. THE CONTRACTOR SHALL PROVIDE 4" LOAM FOR ALL AREAS TO BE SODDED OR SEEDED. PLANTING AREAS SHALL RECEIVE 12" ROLLED THICKNESS OF LOAM. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR PERENNIAL AND ANNUAL FLOWER BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.

LEGEND

EXISTING	PROPOSED
	PROPERTY LINE/R.O.W.
	ABUTTER LINE/R.O.W.
	FENCE LINE/R.O.W.
	EASEMENT
	EDGE WETLAND
	WETLANDS
	BUILDING
	EDGE PAVEMENT
	EDGE CONCRETE
	PAVEMENT PAINT
	EDGE GRAVEL
	CURB LINE
	CHAIN LINK FENCE
	RETAINING WALL
	SIGN
	DECIDUOUS TREE
	CONIFEROUS TREE
	MULCH LINE

PLS OR PE

PROGRESS PRINT

WILLIAM T. CONWAY — LANDSCAPE ARCHITECT — STATE OF MAINE

DESIGNED	CHECKED
DMD	WTC

REV#	BY	DATE	STATUS
B	WTC	8-27-18	REVISED PER CITY COMMENTS
A	WTC	7-13-18	ISSUED TO CITY

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75 John Roberts Rd.
Suite E
South Portland, ME 04106
Tel: 207.200.2100

LANDSCAPING PLAN
OF
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE

FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16380	1" = 40'

SHEET 10 OF 12

PRE-DEVELOPMENT WATERSHED PLAN

250 RIVERSIDE INDUSTRIAL PARKWAY

RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE

FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd
Suite 1A
South Portland, ME 04106
Tel: 207-200-2100

REV.	BY	DATE	STATUS
A	SMF	7-13-18	ISSUED TO CITY

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DESIGNED: SMF
CHECKED: RLW

RICHARD L. MEEK PE.10668

STATE OF MAINE
RICHARD L. MEEK
No. 10668
PROFESSIONAL ENGINEER
7/13/18

PROGRESS PRINT

PROJECT NO.: 15360
SCALE: 1" = 40'

SHEET 11 OF 12

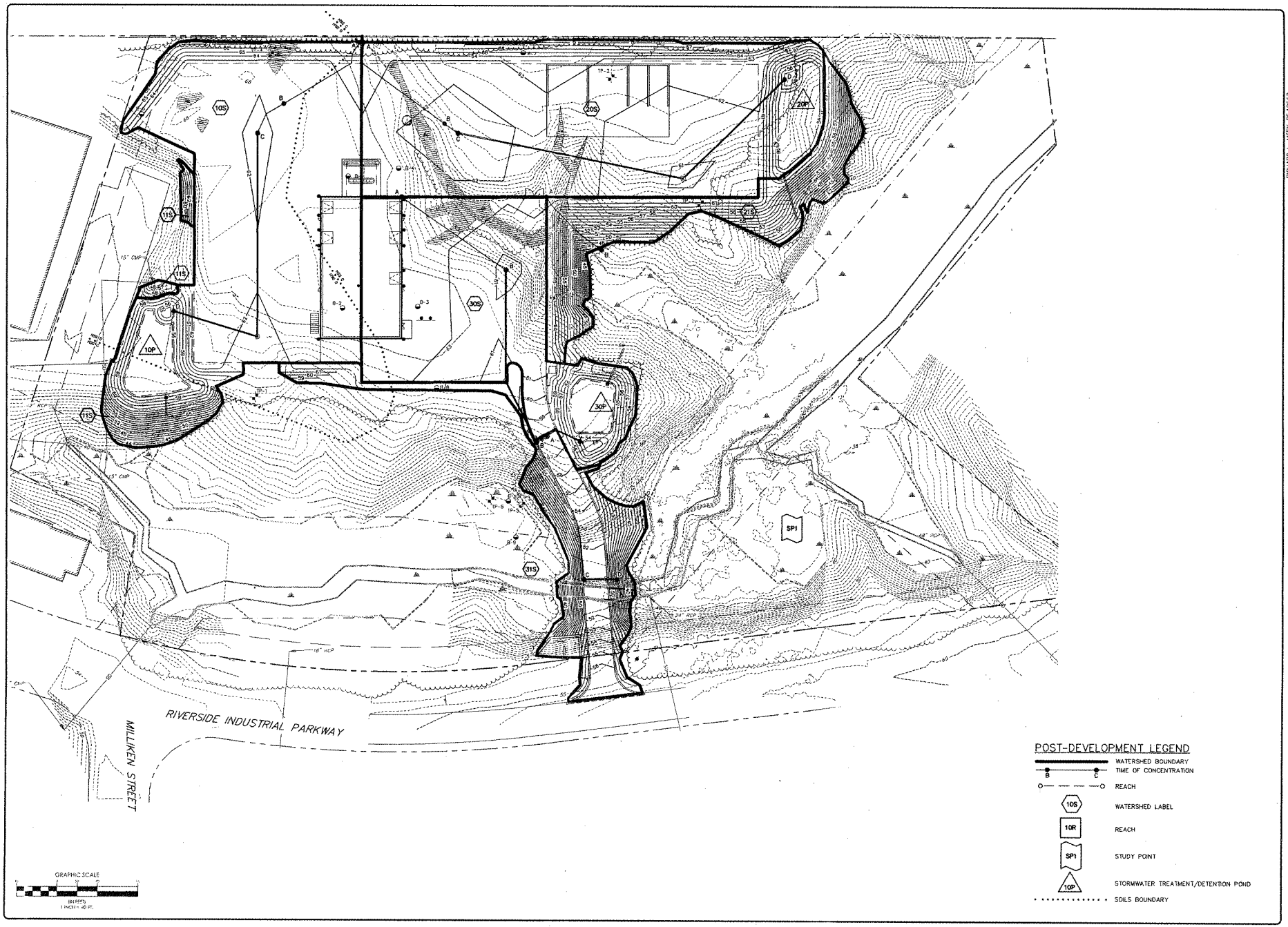
PRE-DEVELOPMENT LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION
- REACH
- WATERSHED LABEL
- REACH
- STUDY POINT
- STORMWATER TREATMENT/DETENTION POND
- SOILS BOUNDARY

RIVERSIDE INDUSTRIAL PARKWAY

MILLIKEN STREET

GRAPHIC SCALE



PROGRESS PRINT

RICHARD L. MEEK, PE 10668

STATE OF MAINE
RICHARD L. MEEK
10668
REGISTERED PROFESSIONAL ENGINEER
8/27/18

DESIGNED	CHECKED
SAH	RLM

REV#	BY	DATE	STATUS
B	SMF	8-27-18	REVISED PER CITY COMMENTS
A	SMF	7-13-18	ISSUED TO CITY

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75 John Roberts Rd
Suite B
South Portland, ME 04106
tel: (207) 200-2100

POST-DEVELOPMENT WATERSHED PLAN
OF
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR
TWO EISENHOWER DRIVE, LLC
P.O. BOX 4900
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 40'

SHEET 12 OF 12

Section 2

Title, Right or Interest

Section 2: Right, Title, Interest

The record owner of the parcel(s) is Two Eisenhower Drive, LLC by deed 32031/039 recorded at the Cumberland County Registry of Deeds (CCRD) on 01/15/2015. The parcels are identified by the City of Portland Assessor as follows: 330A-B-1, 330A-B-4 and 330A-B-11. A copy of the referenced deed is included in this section.

Section 3

Financial Capacity

Section 3: Financial Capacity

A. Estimated Costs

The budget set forth is for the full construction cost of the new property management services business. The following is preliminary estimate of probable cost for site work only:

1.	Mobilization and Erosion Controls	$ 5,000.00
2.	Site Preparation	$ 25,000.00
3.	Earthwork, Soils, Stream Crossing	$ 200,000.00
4.	Site Utilities (Water, Sewer, Storm)	$ 300,000.00
5.	Site electrical	$ 50,000.00
6.	Pavement	$ 200,000.00
7.	Landscape and Lighting	$ 20,000.00
	Total	$ 800,000.00

B. Financing 3.Other.c.Letter

The applicant for the development of this project is the record owner, Two Eisenhower Drive, LLC c/o Mr. David Machesney. A letter from Biddeford Savings written on behalf of the applicant is enclosed as demonstration of financial capability.

Biddeford Savings

June 21, 2018

City of Portland, Planning Division
389 Congress Street, 4th Floor
Portland, ME 04101

RE: Mr. David Machesney and 2 Eisenhower Drive, LLC, 250 Industrial Parkway.

To whom it may concern:

Biddeford Savings is pleased to entertain a request for financing by **2 Eisenhower Drive, LLC and David Machesney** on the development of a commercial building at 250 Industrial Parkway, Portland Maine. David Machesney and 2 Eisenhower Drive, LLC are customers in good standing and have the track record to engage in a project of this size.

The Bank is currently entertaining financing of the above referenced project and based on the current information on the project and subject to completion of underwriting and approval I am supportive of the request and it is my view that they have the financial capacity and wherewithal to complete the proposed project.

If you have any questions or comments regarding this letter, please call me at 571-5673, or send an e-mail to djones@biddefordsavings.com.

Sincerely,

Doug Jones
Senior Vice President
Business Banking Officer

Section 4

Technical Ability

04: Technical Ability

A. Prior experience / B. Personnel

The applicant has retained Sebago Technics, Inc., (STI) a consulting engineering firm, to assist in all aspects of the proposed site development. A firm introduction and key STI personnel resumes are included in this section.

Section 5

Noise

05: Noise

A. Developments producing a minor noise impact

The proposed property services facility is an allowed use and is consistent with City zoning and adjacent uses. No residential areas are located adjacent to the proposed project site. Plans are included in the SLODA submittal, Section 1 and appended.

Per local zoning, the IM District maximum permissible sound levels of any continuous, regular or frequent source of sound produced by an activity shall be as follows:

a. Seventy (70) dBA between the hours of 7:00a.m. and 10:00 p.m.

b. Fifty-five (55) dBA between the hours of 10:00 p.m. and 7:00 a.m., as measured at or within the boundaries of any residential zone.

It is anticipated that the noise from the site will not exceed the Municipal threshold.

B. Developments potentially producing a major noise impact.

Not applicable. The proposed site development does not meet the definition of a project producing a major noise impact.

Section 6

Visual Quality and Scenic Character

06: Visual Quality and Scenic Character

The proposed new property services facility will not significantly impact the visual quality of the surrounding landscape, nor will it significantly affect the scenic character of the area. Visual impact to surrounding area is minimized by construction of a lower height building and by preservation of vegetation where practicable. The project is not adjacent to residential areas.

The development does not impact areas of significant scenic character, therefore a Visual Impact Analysis has not been prepared. The site meets the NRPA standards for no unreasonable impact on scenic resources, and the proposed site activity will not be visible from scenic resources as defined by Chapter 315 of the relevant Maine DEP regulations.

Section 7

Wildlife & Fisheries

Section 7: Wildlife & Fisheries

Correspondence with Maine Department of Inland Fisheries and Wildlife indicates that there are no mapped essential habitats that will be affected by the project nor do they anticipate significant impact to any of the bat species. No tree removal is proposed during the spring/summer bat rearing season. The proposed stream crossing design includes an open bottom concrete box culvert as recommended by MDIFW to allow for full fish passage. Impact has been minimized by including the smallest stream crossing area that will allow for safe vehicular passage to the development area.

Per MDIFW suggestion, STI contacted USFWS. The Maine Ecological Services Field Office indicates no critical habitats within the project area under their jurisdiction. There is one threatened species identified, the Northern long-eared bat (*Myotis septentrionalis)* that appears on the species list. As previously stated, no tree removal will take place during the pup rearing season. Reference is made to the MDIFW and USFWS letters included in this section.

Section 8

Historic Sites

Section 8: Historic Sites

The proposed development is not located in a City Historic District and will not affect a Designated Landmark. Per the enclosed inquiry response from Maine Historic Preservation, dated 07/17/17, the project will not affect identified historic or archaeological features.

Section 9

Unusual Natural Areas

Section 9: Unusual Natural Areas

Per the State of Maine Department of Agriculture, Conservation and Forestry Natural Areas Program (MNAP), there are no known mapped significant natural features within the project site. Reference is made to the enclosed inquiry reply received from MNAP, this section.

Section 10

Buffers

Section 10: Buffers

None of the proposed work area is located in a previously designated buffer area and no new dedicated buffering is proposed as part of this site development project. The portion of the site outside of the development area is wooded and provides vegetative buffering between resources and neighboring properties. Disturbed areas adjacent to the building/parking will be seeded with New England Conservation Mix providing a permanent cover of grasses and wildflowers for erosion control, wildlife habitat value and aesthetics.

Section 11

Soils

Section 11: Soils

Soils were obtained from the USDA Web Soil Survey (WSS) for Cumberland County. Soils identified on the site as follows:

Table 1 – Proximity Soil Types and Characteristics		
Soil Type	**Symbol**	**HSG**
Suffield Silt Loam, 25 to 45% slopes, eroded	SuE2	C
Buxton Silt Loam, 3 to 8% slopes	BuB	C/D
Scantic silt loam	Sn	D

Reference is made to the WSS survey documents, this section and Section 12, Stormwater.

Hydric Soils

Sebago Technics, Inc. mapped wetland areas in 2017 and the areas are shown on the enclosed existing conditions and site plans. Alteration of hydric soils is limited to the 7,448 square feet shown within the proposed building/parking precinct. The proposed wetland impact area is being permitted via a MDEP Tier 1 NRPA.

Section 12

Stormwater Management

Section 13

Urban Impaired Stream Submissions

Section 13: Urban Impaired Streams

Stormwater drainage from the project site is tributary to Dole Brook, an Urban Impaired Stream identified by the Maine Department of Environmental Protection, the development will be required to contribute to the Compensation Fee Utilization Program for Dole Brook. Additionally, an NRPA PBR – Section 10, Stream Crossing permit application will be filed for impact resulting from the proposed access drive.

Section 14

Basic Standardds

Section 14: Basic Standards

A. Narrative

Site specific Erosion and Sedimentation Control (ESC) plans for the proposed development site have been prepared by Sebago Technics and are shown on the enclosed site drawings. The plans address temporary and permanent erosion control measures including location, details and a written plan. During construction a variety of stabilization measures will be used to prevent mobilization of soil due to water or wind action. All ESC and stabilization measures have been prepared to address the requirements of the basic stabilization standards as defined by Maine DEP Chapter 500, Stormwater Management regulations. Maintenance, inspections and Housekeeping is addressed in the Stormwater Management Plan, Section 12.

B. Implementation schedule

Final stabilization removals are anticipated during spring/summer 2019.

C./D./E. ESC Plan, Details and Work Limits

All of the required and specified ESC measures are shown on the enclosed site plans. The proposed measures include the drainage and erosion control elements, their locations and the work/disturbance limits, as required.

F. Design Drawings

The enclosed design drawings include ESC measures designed in accordance with the *Erosion and Sediment Control Handbook for Construction: Best Management Practices*, latest edition.

G. ESC Calculations for sizing, spacing or stabilizing ESC measures.

Reference is made to Section 12-Stormwater for calculations related to sizing and spacing of ESC measures, as applicable.

Section 15

Groundwater

Section 15: Groundwater

A. Narrative and Report

The proposed property maintenance facility with not draw from, or eject to aquifers. No groundwater degradation is anticipated as a result of the site development.

(1) Location and Maps

The site is not located in a Significant Sand and Gravel Aquifer. Surficial Geology indicates that the site is located in a Presumpscot Formation, typical of the adjacent area and the Bedrock Geological Maps indicates that the project is within an area identified as SOb – Bucksport Formation. See maps, this section.

(2) Quantity

We do not anticipate large volumes of construction period dewatering discharge. No other draw or discharge is anticipated as part of the site development.

(3) Sources

Potential sources of contamination are limited to the following:

Solid waste: All solid waste will be collected internal to the building and will be disposed of off-site at a licensed facility by the tenant. No liquid solid waste is anticipated.

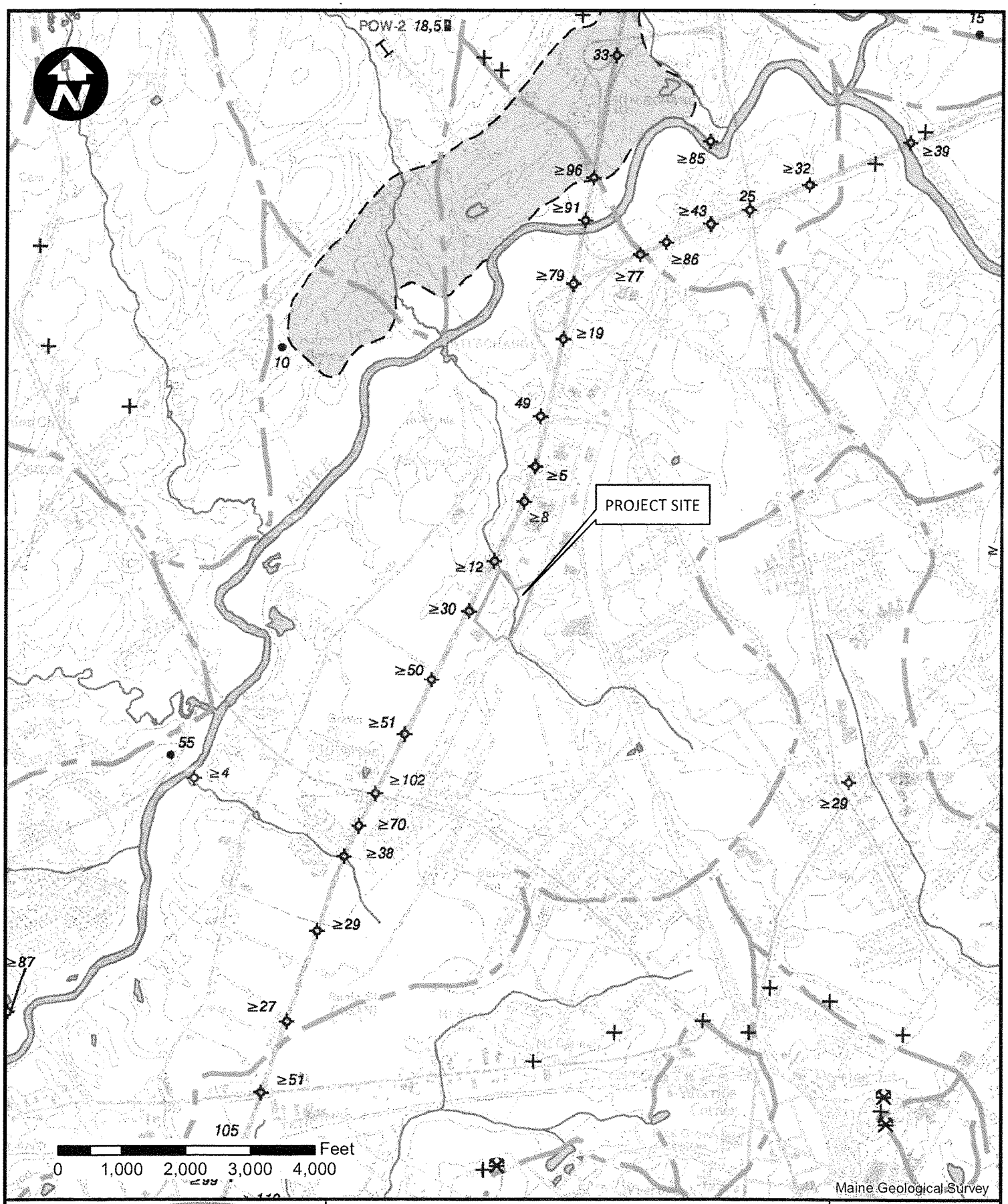
Hazardous materials: No hazardous materials will be generated by the facility. Anticipated hazardous materials are limited to the following:

Fuel: An underground fuel storage tank will be installated to serve the private gasoline needs of the facility. Construction and maintenance of the fueling area, tanks, etc. will be performed in accordance with applicable regulations.

(4) Measures to prevent degradation.

A Spill Prevention Plan will be utilized by the tenant. The plan will be submitted to the Department under separate cover.

B. Groundwater Protection Plan



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75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR: AQUIFER MAP

250 Riverside Industrial Parkway

SCALE: 1 " = 2,000 '

DATE: 08/27/2018

LOCATION:

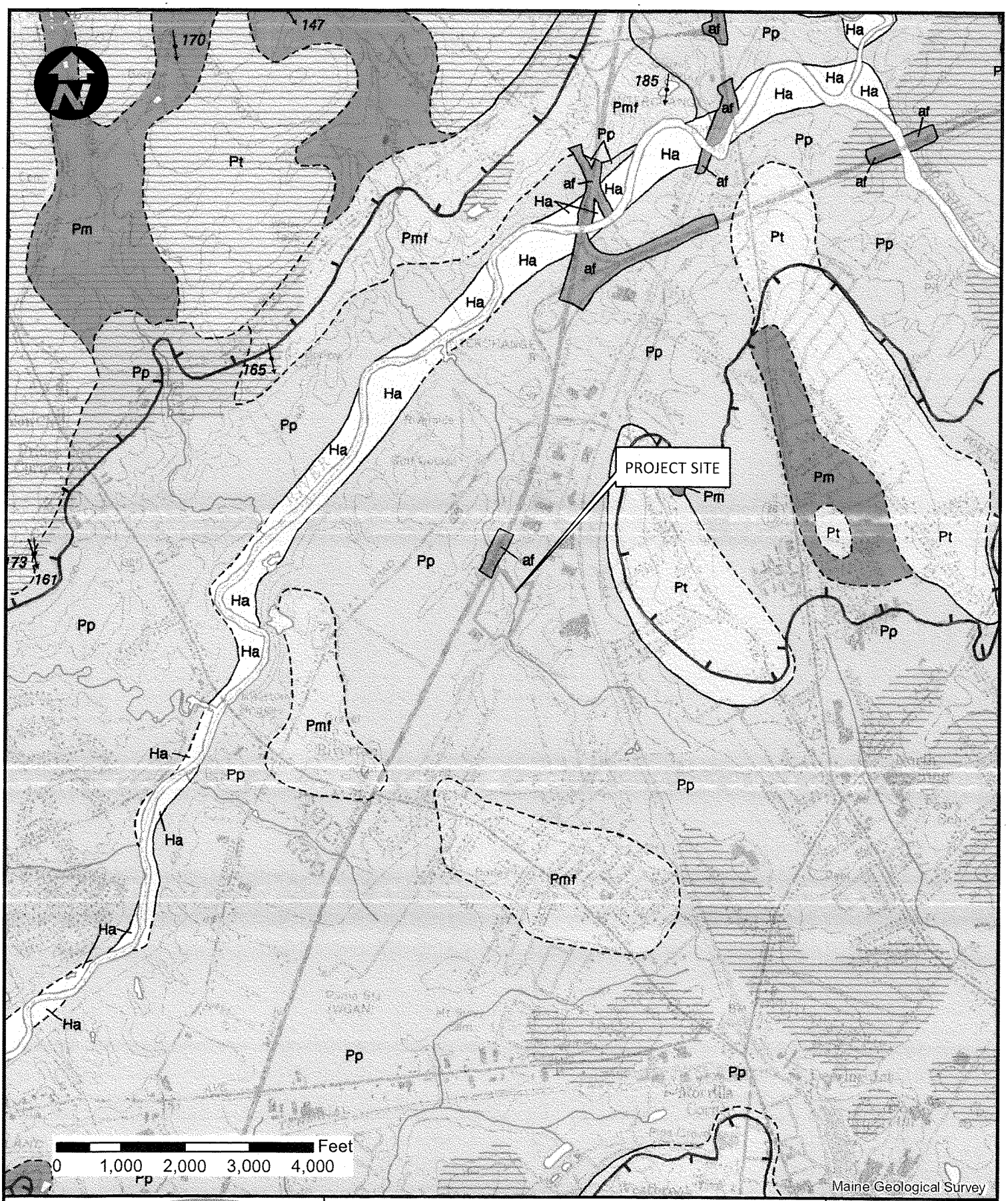
250 Riverside Industrial Parkway
Portland, ME 04103

INFORMATION:

Maine Geological Survey: Aquifer Maps_24K
USGS Quadrangle: Portland West

16360_Aquifer Map.mxd

PROJECT NUMBER: 16360



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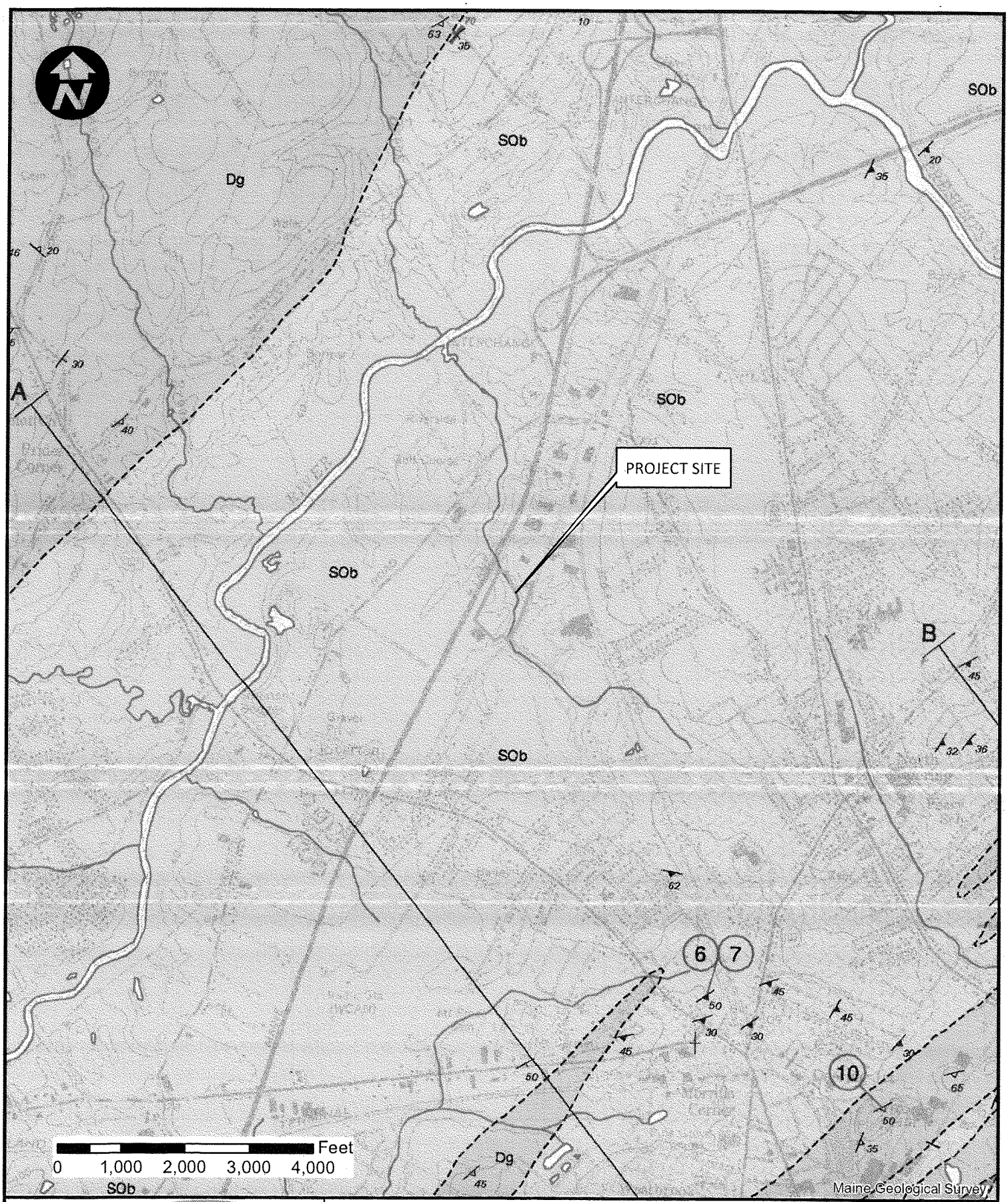
South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	SURFICIAL GEOLOGY MAP 250 Riverside Industrial Parkway	SCALE:	1 " = 2,000 '
		DATE:	08/27/2018
LOCATION:	250 Riverside Industrial Parkway Portland, ME 04103	INFORMATION:	Maine Geological Survey_Bedrock Geology Maps: Portland West

16360_Bedrock Geology Map.mxd

PROJECT NUMBER: 16360



SEBAGO TECHNICS

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South Portland, ME 04106
Tel. 207-200-2100

TITLE FOR:	BEDROCK GEOLOGY MAP 250 Riverside Industrial Parkway	SCALE:	1 " = 2,000 '
		DATE:	08/27/2018
LOCATION:	250 Riverside Industrial Parkway Portland, ME 04103	INFORMATION:	Maine Geological Survey_Bedrock Geology Maps: Portland West

16360_Bedrock Geology Map.mxd

PROJECT NUMBER: 16360

Section 16

Water Supply

Section 16: Water Supply

Domestic and fire water service will be supplied by the available public water supply within Riverside Industrial Parkway provided by the Portland Water District (PWD). Please refer to the enclosed letter from the District indicating that there is sufficient capacity to serve the proposed site development. No on-site wastewater disposal is proposed as part of the project.

Section 17

Wastewater Disposal

Section 17: Wastewater Disposal

A municipal facility with provide sewage disposal. A *City of Portland Wastewater Capacity Application* has been submitted to the City in the Site Plan Application. The site plan shows the proposed sewer connection location, as required. A copy of the response regarding wastewater ability/capacity will be forwarded upon receipt.

Section 18

Solid Waste

Section 18: Solid Waste

Solid waste removal will be provided by the property services facility. The majority of the solid waste will be generated by the office uses and will be recycled to the greatest extent practicable. Solid waste will be stored inside the building.

Section 19

Flooding

Section 19: Flooding

The project site is not located in a flood plain and will not cause an unreasonable flood hazard to any structure. A copy of the Portland GIS Map View Flood Map based on 1986 FEMA flood boundaries is enclosed in this section.

Section 20

Blasting

Section 20: Blasting

Given the nature of the site and the proposed project, it is not anticipated that blasting will be required. Should ledge be encountered during construction, a blasting plan will be submitted for approval that has been developed to be in compliance with the accepted limit for safe levels of blasting vibrations as developed by the U.S. Bureau of Mines as presented in Appendix B of the U.S. Bureau of Mines, RI 8507.

Blasting Requirements

Should blasting be necessary, we recommend that the following controls be implemented for the project:

The Contractor should comply with all applicable laws, rules, ordinances, and regulations of the federal government, the State of Maine, and the City of Portland governing transportation, storage, handling and use of explosives.

Prior to the start of rock excavation or blasting work, notices should be sent to residents and businesses in the area describing the blasting and rock excavation work, indicating the approximate schedule of work, and describing blasting procedures, mitigation measures, and blast warning signals.

Prior to the start of blasting work, pre-blast condition surveys should be conducted of all existing structures and conditions on the site, adjacent to the site, or in the vicinity of the site. These surveys should extend to such structures, wells, or an item that may be affected by the Contractor's blasting operations. As a minimum, condition surveys should be performed on all structures within a half-mile of anticipated blasting areas.

Prior to the start of blasting work, the Contractor should submit to the engineer for review a blasting plan containing details of proposed blasting and construction operations including:

A. Sequence and schedule of blasting rounds including the general sequence of drilling, blasting, excavating, etc.

B. Specifics of typical blast rounds and open cut blast rounds in deepest rock cut areas and areas closest to existing structures.

C. In each area specified, include the following blast round details:

- Diameter, spacing, burden, depth and orientation of each blast hole for each round design.
- Nomenclature and amount (in terms of weight and number of cartridges) of explosives and distribution of charge to be used within each hole, on each delay, and the total for the blast.
- Nomenclature and type of detonators and delay pattern for the round.
- Type and location of stemming to be used in holes.
- Calculations of anticipated vibration levels at nearest adjacent structure or well.

D. Specifics of Test Blasts to check effectiveness and vibration characteristics of typical trench and open cut blasting rounds.

E. Methods of matting or covering the blast area to prevent fly rock and excessive air blast overpressure.

F. Name and qualifications of licensed blaster who will be on site at all times directly supervising the loading and detonation of each blast.

G. Name and qualifications of the person responsible for conducting pre-blast condition surveys.

H. Name and qualifications of the person responsible for monitoring and reporting blast vibrations.

I. Details of an audible advance signal system to be employed at the job site as a means of informing workers, Engineer, Architect, Owner, and the general public that a blast is about to occur. Details of access control during blasting.

The Contractor should conduct all blasting activity in such a manner that the peak particle velocity of ground vibration measured at the locations of the nearest structures or wells to the blast does not exceed the "safe limits" recommended by the U.S. Bureau of Mines as presented in Figure B-1 of Appendix B of U.S. Bureau of Mines, RI 8507.

The Contractor should conduct all blasting activities in such a way that sound levels from blasting shall not exceed the limits given in the Maine Department of Environmental Protection Rules, Chapter 375.10 (c)(4)(c).

# of Blasts Per Day	Sound Level Limit
1	129 dBL
2	126 dBL
3	124 dBL
4	123 dBL

Blast monitoring should be conducted by an independent firm trained in the use of a seismograph, and records should be analyzed and results reported by persons familiar with analyzing and reporting the frequency content of a seismograph record. A minimum of two (2) engineering seismographs shall be used for each blast, one each adjacent to the nearest off-site structures or wells which lie within a 300-foot radius of blasting activities.

Blast Monitoring Equipment: All instrumentation proposed for use on the project shall have been calibrated within the previous six (6) months to a standard traceable to the National Bureau of Standards. Characteristics of required instrumentation are listed below:

- Measure the three (3) mutually perpendicular components of particle velocity in the directions vertical, radial and perpendicular to the vibration source.

- Measure and display the maximum peak particle velocity component and air blast overpressure. These readings must be displayed and be able to be read in the field, immediately after each blast.

- Furnish a permanent time history record of particle velocity waveforms and air blast overpressure waveforms, so that frequency and time of maximum peak particle velocity or air blast overpressure can be determined.

Blast Monitoring Reports: Within 24 hours following each blast, the Contractor should submit to the Engineer a Blast Monitoring Report. Each Blast Monitoring Report should include all of the following applicable items:

- Blast round design data, as indicate in Section C of the Blasting Requirements.

- Blast Monitoring Location Plan, indicating the location of the blast, the monitoring locations, and the distances from the blast to monitoring locations.

- Vibration and air blast overpressure data from each seismograph, including a copy of the strip chart (or other permanent record of velocity/time waveform) with calibration and monitoring record marked with the date, time and location of the blast.

- In the event that the Contractor's design round results in ground vibrations and/or air blast overpressures exceed the blasting limit criteria presented herein, the Contractor should immediately revise the round design appropriately and submit the revised round design to the Engineer for review. Allow sufficient time for review.

- The Contractor should report to the Engineer in writing all blasting complaints received by the Contractor within 24 hours of receipt. Each blast complaint report should include the name and address of the complaint, time received, date and time of blast complained about, and a description of the circumstances, which led to the complaint. Upon receipt of a written complaint from a resident alleging damage from the blasting, the Contractor's representative or a representative of the Blaster's Insurance Company should investigate the claim and a written report should be issued to the homeowner, with a copy to the Engineer, of the results of the investigation and the response of the Contractor. This written report should be received by the resident and the Engineer within 15 work days of receipt of the written complaint.

Review by the owner and the owner's consultant of the blast designs and techniques shall not relieve the Contractor of his responsibility for the accuracy, adequacy and safety of the blasting, exercising proper supervision and field judgment and producing the results within the blasting limits required by the requirements.

Blasting shall be limited to between the hours of 9:00 a.m. and 4:00 p.m., Monday through Friday.

Blasting mats shall be utilized for all blast rounds detonated to prevent the throw of fly rock from the blasting area, unless the Contractor's independent professional engineer/seismologist determines that the overburden is sufficient enough to prevent fly rock.

Ammonium Nitrate Fuel Oil (ANFO) shall not be permitted for blasting.

At the start of blasting, the Contractor shall perform a series of test blast to establish a site-specific relationship between the charge weight per millisecond delay and peak ground vibration levels at various distances from the blast. The results of the test blasts will form the basis for selection of maximum permissible charge weights during production blasting.

Sections 21, 22, 23 and 24

Air Emissions
Odors
Water Vapor
Sunlight

SECTION 21: Air Emissions

No unreasonable adverse environmental effect on air quality is anticipated as part of the proposed site development activities. Vehicular traffic will be limited to paved and gravel areas as shown on the enclosed plans and the heating/ventilation source for the proposed building will be a small-scale commercial unit. This project does not require an Air Emission License.

SECTION 22: Odors

The proposed site improvements will not result in the creation of any significant odors during or after construction.

SECTION 23: Water Vapor

No large-scale water vapor emissions are proposed as part of the site development, therefore, no adverse effect or unreasonable alteration of climate is associated with this project.

SECTION 24: Sunlight

The proposed new building will not block access to direct sunlight by neighboring structures that utilize solar energy through active or passive systems.

October 5, 2018

Proposed Property Services Facility - 250 Riverside Industrial Parkway, Portland

Dear Neighbors and Interested Parties:

Please join us for a neighborhood meeting to discuss plans for a proposed new property services facility to be located at 250 Riverside Industrial Parkway.

Meeting Location: **NAPA Distribution Center Annex, Lunch Room**
216 Riverside Industrial Parkway

Meeting Date: **October 18, 2018**

Meeting Time: 3 P.M.

The City requires that property owners within proximity to the proposed development and residents of an "interested parties list" provided by the City, be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board.

We look forward to meeting with you to discuss the proposed project in person. If you have any questions, please call the site design Project Manager, Shawn M. Frank, P.E., Senior Vice President, Commercial Development at Sebago Technics, Inc. at (207) 200-2062.

Sincerely,

David Machesney
Two Eisenhower Drive, LLC

Neighborhood Meeting Sign-In Sheet

16360

Date of Meeting: October 18, 2018, 3 P.M.

Location: NAPA Distribution Annex, Lunch Room
216 Riverside Industrial Parkway

Re: Proposed New Property Services Facility at 250 Riverside Industrial Parkway

Members of the Public in Attendance	
Name	**E-mail**
David E. Machesney	DMachesney@pattabbott.com
Shannon Frank, Sebago Technics	SFrank@sebagotechnics.com
Jon Bell, PATCO	jbell@patco.com
WILLIAM THUN	NONE (201 Riverside Industrial Parkway)
Developer and Consultant Team in Attendance:	

SEBAGO TECHNICS

CIVIL ENGINEERING ▪ SURVEYING ▪ LANDSCAPE ARCHITECTURE

October 18, 2018

Neighborhood Meeting Minutes

Proposed Property Services Facility - 250 Riverside Industrial Parkway, Portland

Meeting start: 3:04 PM

Meeting Location: NAPA Distribution Center Annex, Lunch Room
216 Riverside Industrial Parkway

Discussion

Shawn Frank, P.E. and design Project Manager from Sebago Technics provided a detailed project overview to the meeting attendees.

Attendance was limited to one member of the community, Mr. William Thun, who owns a nearby residence and has interest in the development. The other two attendees included Jon Bell, a representative of the General Contractor, PATCO, and the applicant/owner, Mr. David Machesney of Two Eisenhower Drive, LLC. Reference is made to the attached Sign-In Sheet.

Mr. Thun specifically questioned the tree cutting required for development of the parcel and was pleased to learn that trees located along the stream will be preserved with the exception of the stream crossing location. Mr. Frank also explained that the proposed stormwater treatment, in regard to runoff, is being treated through a series of three soil filters prior to outletting.

Additional discussion continued between the project team members until the meeting adjourned at 4:15 PM.

SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

Memorandum

16360

To: **Shawn Frank, P.E.**

From: **Derek Caldwell, P.E., PTOE**

Date: **November 27, 2018**

Subject: **Response Traffic Comments**
Seabreeze Property Services Facility
Portland, Maine

This memorandum serves a response to the comments received on the subject project from Thomas Errico, P.E. dated November 13, 2018. The review comments are shown in italic text with the response in bold.

1.) *The applicant has conducted a traffic count at the existing Seabreeze Facility on Presumpscot Street and estimates 75 peak hour trips will enter and exit the proposed site. The applicant shall convert the trip count to passenger-car equivalents and provide specific information on how business operations will change (employee and business plan growth) and if there is seasonal variation in business activity.*

Based upon the collected turning movement counts at the existing Seabreeze Facility, traffic entering and exiting the site was classified as cars, and therefore we did not convert any heavy vehicles to passenger-car equivalents.

We have confirmed with the applicant that the intent of the proposed development is to relocate the existing operations of their existing Presumpscot Street facility, and not to provide for a growth in operations. There is not significant seasonal variation in business activity. Therefore, the trip generation estimate of 75 Peak Hour Trips provided in the previously submitted materials is still appropriate.

Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Cars - Trucks

	Presumpscot St From North		Seabreeze Landscaping From East		Presumpscot St From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
05:00 AM	2	3	0	0	1	0	6
05:15 AM	0	7	0	0	5	0	12
05:30 AM	1	11	0	0	2	0	14
05:45 AM	1	15	1	0	2	2	21
Total	4	36	1	0	10	2	53
06:00 AM	5	19	0	0	6	2	32
06:15 AM	1	38	0	1	7	2	49
06:30 AM	12	49	1	2	11	8	83
06:45 AM	7	55	6	1	12	9	90
Total	25	161	7	4	36	21	254
07:00 AM	2	49	12	5	17	1	86
07:15 AM	0	82	6	3	13	0	104
07:30 AM	1	117	3	3	16	1	141
07:45 AM	4	132	0	2	24	1	163
Total	7	380	21	13	70	3	494
Grand Total	36	577	29	17	116	26	801
Apprch %	5.9	94.1	63	37	81.7	18.3	
Total %	4.5	72	3.6	2.1	14.5	3.2	
Cars	36	576	29	17	113	26	797
% Cars	100	99.8	100	100	97.4	100	99.5
Trucks	0	1	0	0	3	0	4
% Trucks	0	0.2	0	0	2.6	0	0.5

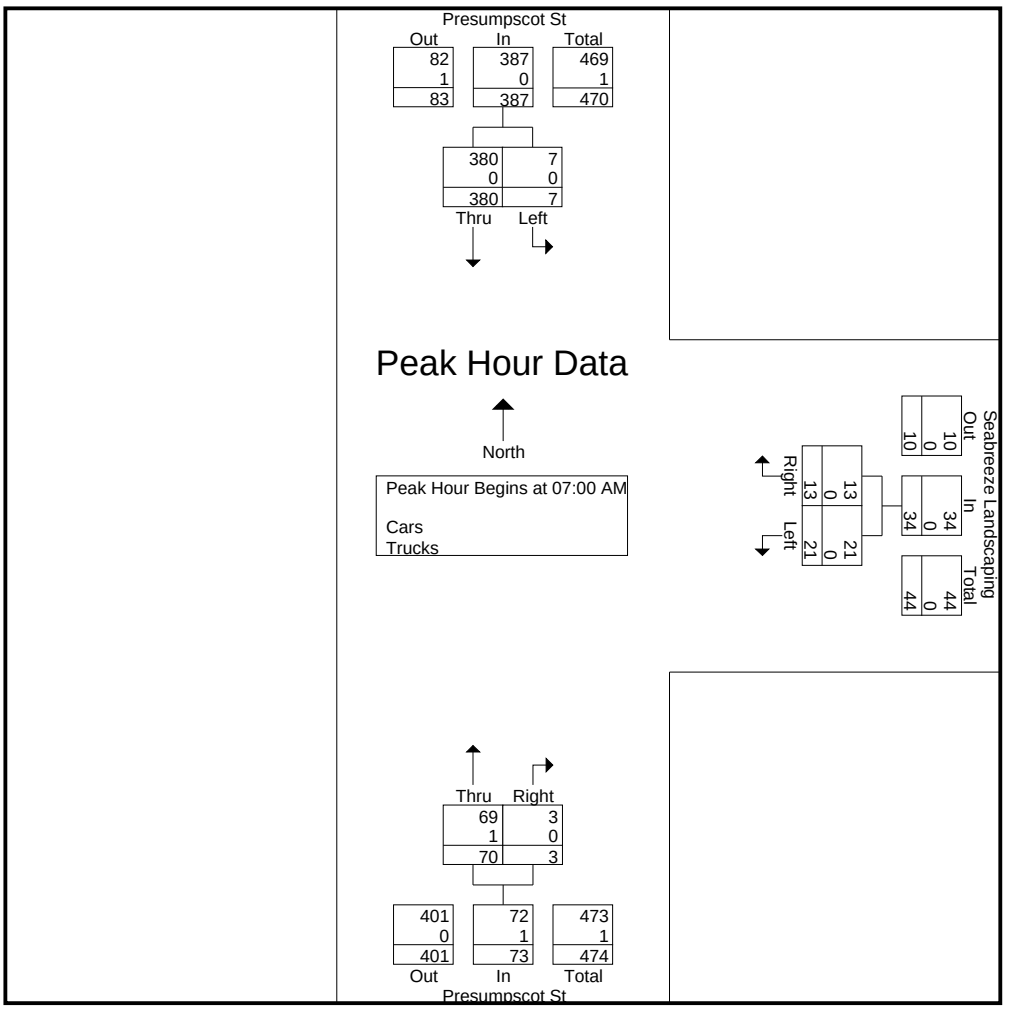
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 2

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	2	49	51	**12**	**5**	**17**	17	**1**	18	86
07:15 AM	0	82	82	6	3	9	13	0	13	104
07:30 AM	1	117	118	3	3	6	16	1	17	141
07:45 AM	**4**	**132**	**136**	0	2	2	**24**	1	**25**	**163**
Total Volume	7	380	387	21	13	34	70	3	73	494
% App. Total	1.8	98.2		61.8	38.2		95.9	4.1		
PHF	.438	.720	.711	.438	.650	.500	.729	.750	.730	.758
Cars	7	380	387	21	13	34	69	3	72	493
% Cars	100	100	100	100	100	100	98.6	100	98.6	99.8
Trucks	0	0	0	0	0	0	1	0	1	1
% Trucks	0	0	0	0	0	0	1.4	0	1.4	0.2



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

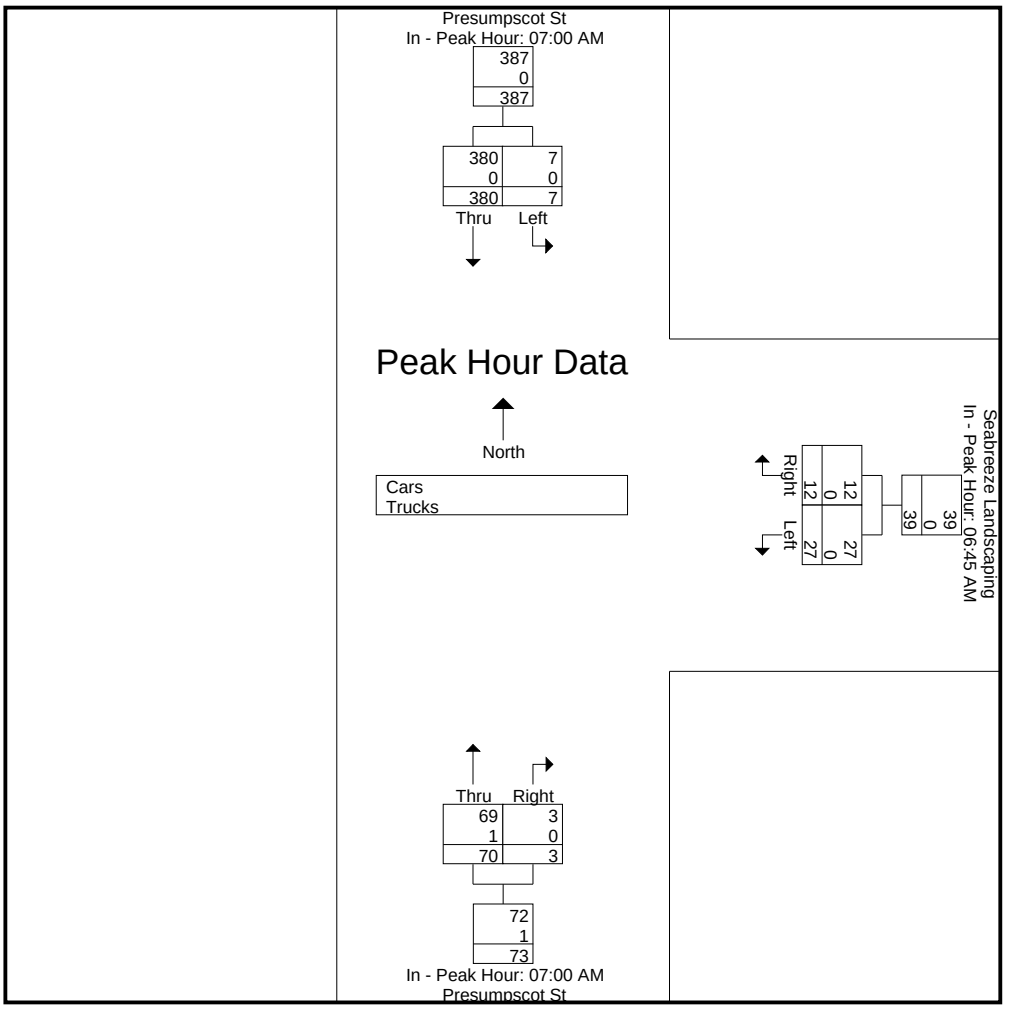
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 3

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			06:45 AM			07:00 AM		
+0 mins.	2	49	51	6	1	7	17	**1**	18
+15 mins.	0	82	82	**12**	**5**	**17**	13	0	13
+30 mins.	1	117	118	6	3	9	16	1	17
+45 mins.	**4**	**132**	**136**	3	3	6	**24**	1	**25**
Total Volume	7	380	387	27	12	39	70	3	73
% App. Total	1.8	98.2		69.2	30.8		95.9	4.1	
PHF	.438	.720	.711	.563	.600	.574	.729	.750	.730
Cars	7	380	387	27	12	39	69	3	72
% Cars	100	100	100	100	100	100	98.6	100	98.6
Trucks	0	0	0	0	0	0	1	0	1
% Trucks	0	0	0	0	0	0	1.4	0	1.4



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Cars

	Presumpscot St From North		Seabreeze Landscaping From East		Presumpscot St From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
05:00 AM	2	3	0	0	1	0	6
05:15 AM	0	7	0	0	4	0	11
05:30 AM	1	11	0	0	2	0	14
05:45 AM	1	15	1	0	2	2	21
Total	4	36	1	0	9	2	52
06:00 AM	5	19	0	0	6	2	32
06:15 AM	1	37	0	1	7	2	48
06:30 AM	12	49	1	2	10	8	82
06:45 AM	7	55	6	1	12	9	90
Total	25	160	7	4	35	21	252
07:00 AM	2	49	12	5	16	1	85
07:15 AM	0	82	6	3	13	0	104
07:30 AM	1	117	3	3	16	1	141
07:45 AM	4	132	0	2	24	1	163
Total	7	380	21	13	69	3	493
Grand Total	36	576	29	17	113	26	797
Apprch %	5.9	94.1	63	37	81.3	18.7	
Total %	4.5	72.3	3.6	2.1	14.2	3.3	

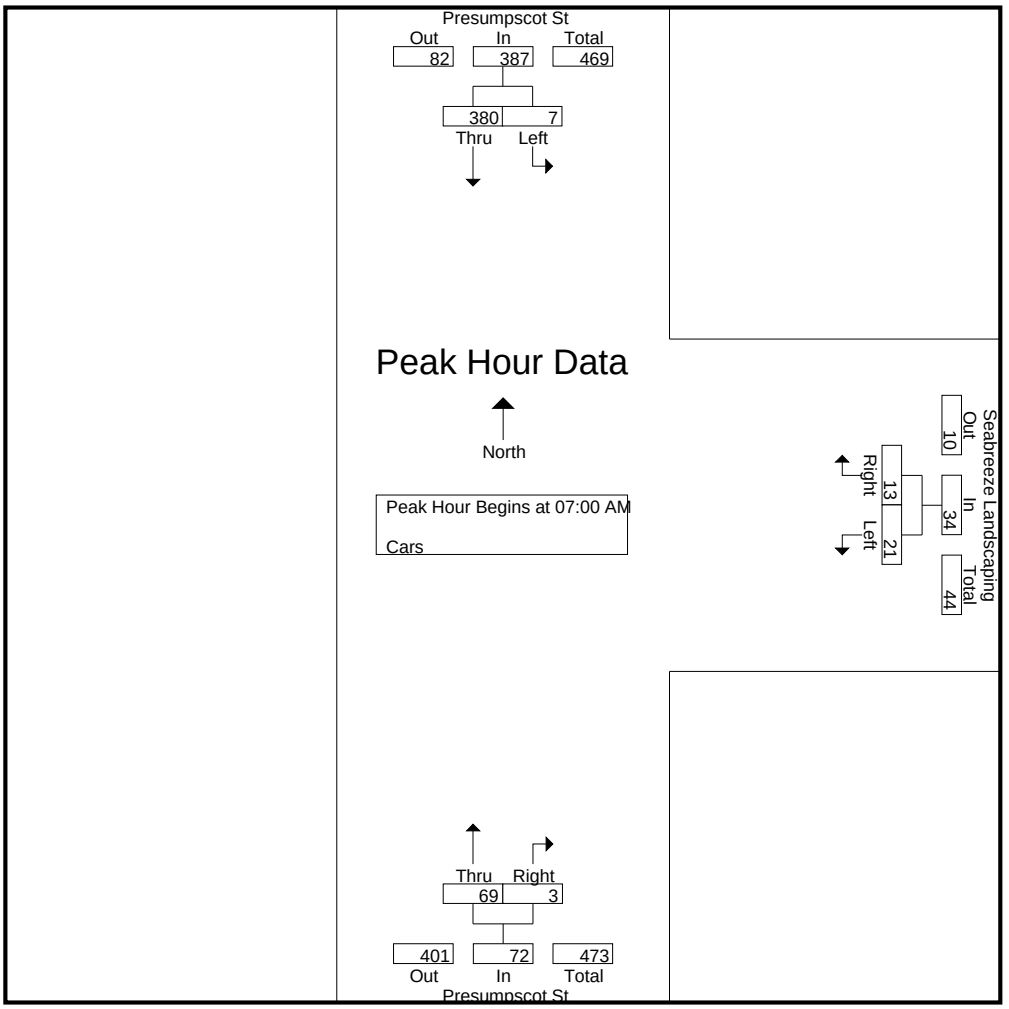
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 5

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	2	49	51	**12**	**5**	**17**	16	**1**	17	85
07:15 AM	0	82	82	6	3	9	13	0	13	104
07:30 AM	1	117	118	3	3	6	16	1	17	141
07:45 AM	**4**	**132**	**136**	0	2	2	**24**	1	**25**	**163**
Total Volume	7	380	387	21	13	34	69	3	72	493
% App. Total	1.8	98.2		61.8	38.2		95.8	4.2		
PHF	.438	.720	.711	.438	.650	.500	.719	.750	.720	.756



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

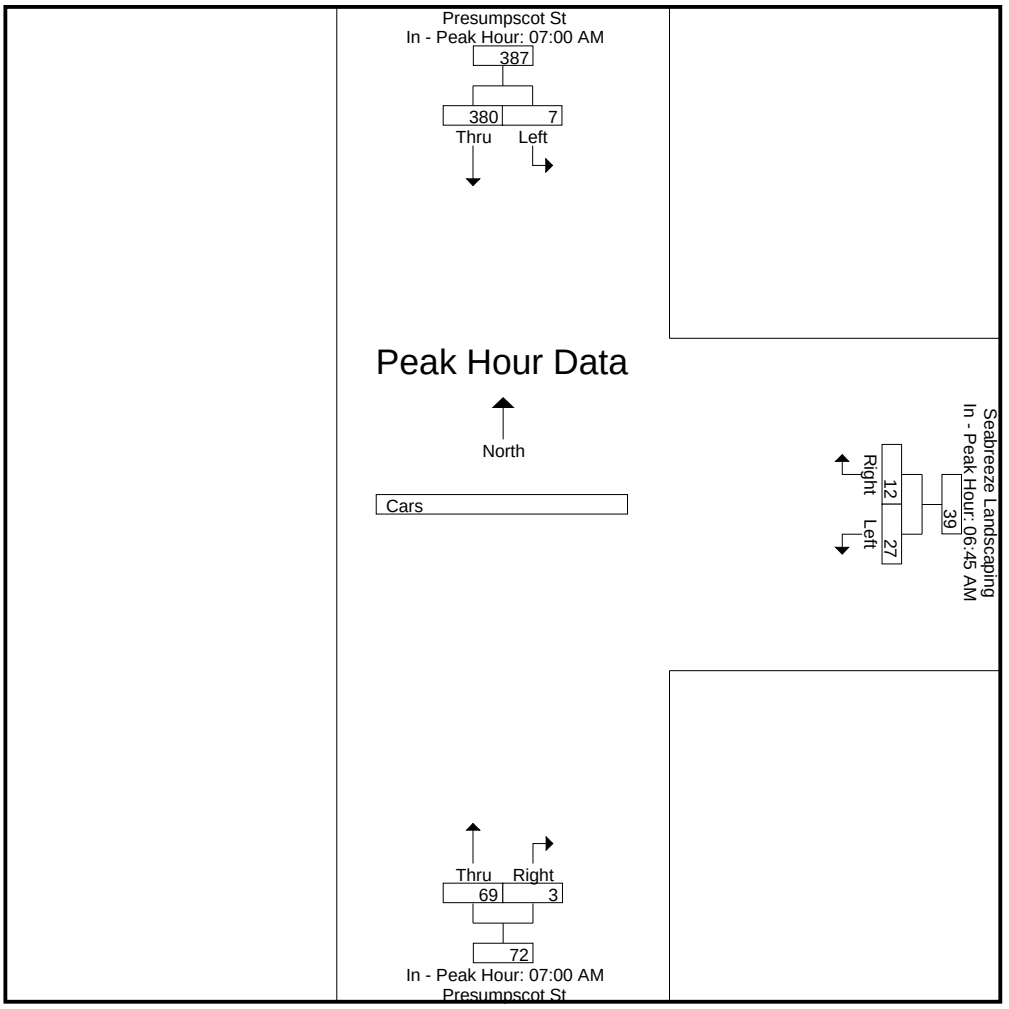
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 6

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM			06:45 AM			07:00 AM		
+0 mins.	2	49	51	6	1	7	16	**1**	17
+15 mins.	0	82	82	**12**	**5**	**17**	13	0	13
+30 mins.	1	117	118	6	3	9	16	1	17
+45 mins.	**4**	**132**	**136**	3	3	6	**24**	1	**25**
Total Volume	7	380	387	27	12	39	69	3	72
% App. Total	1.8	98.2		69.2	30.8		95.8	4.2	
PHF	.438	.720	.711	.563	.600	.574	.719	.750	.720



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Trucks

	Presumpscot St From North		Seabreeze Landscaping From East		Presumpscot St From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
05:00 AM	0	0	0	0	0	0	0
05:15 AM	0	0	0	0	1	0	1
05:30 AM	0	0	0	0	0	0	0
05:45 AM	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	1
06:00 AM	0	0	0	0	0	0	0
06:15 AM	0	1	0	0	0	0	1
06:30 AM	0	0	0	0	1	0	1
06:45 AM	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	2
07:00 AM	0	0	0	0	1	0	1
07:15 AM	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	1
Grand Total	0	1	0	0	3	0	4
Apprch %	0	100	0	0	100	0	
Total %	0	25	0	0	75	0	

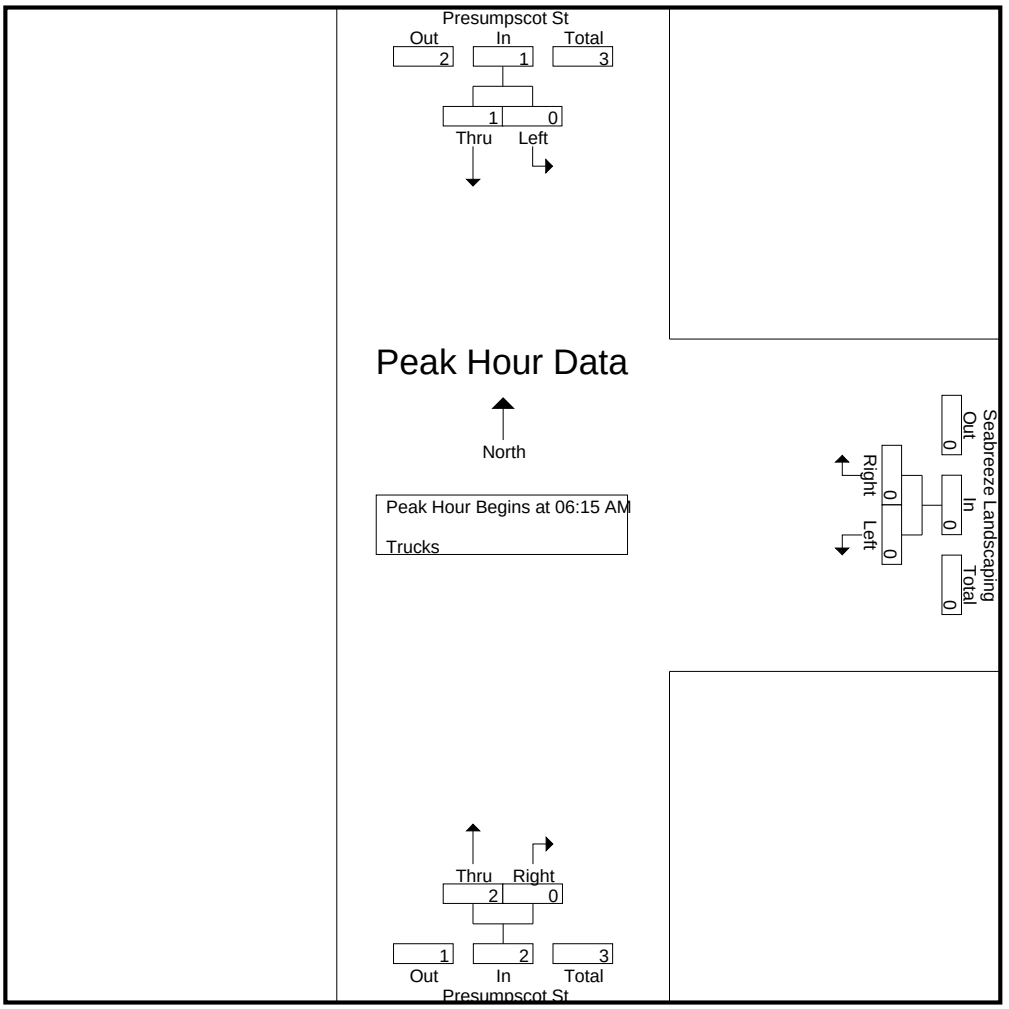
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 8

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 06:15 AM										
06:15 AM	0	**1**	**1**	0	0	0	0	0	0	**1**
06:30 AM	0	0	0	0	0	0	**1**	0	**1**	1
06:45 AM	0	0	0	0	0	0	0	0	0	0
07:00 AM	0	0	0	0	0	0	1	0	1	1
Total Volume	0	1	1	0	0	0	2	0	2	3
% App. Total	0	100		0	0		100	0		
PHF	.000	.250	.250	.000	.000	.000	.500	.000	.500	.750



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

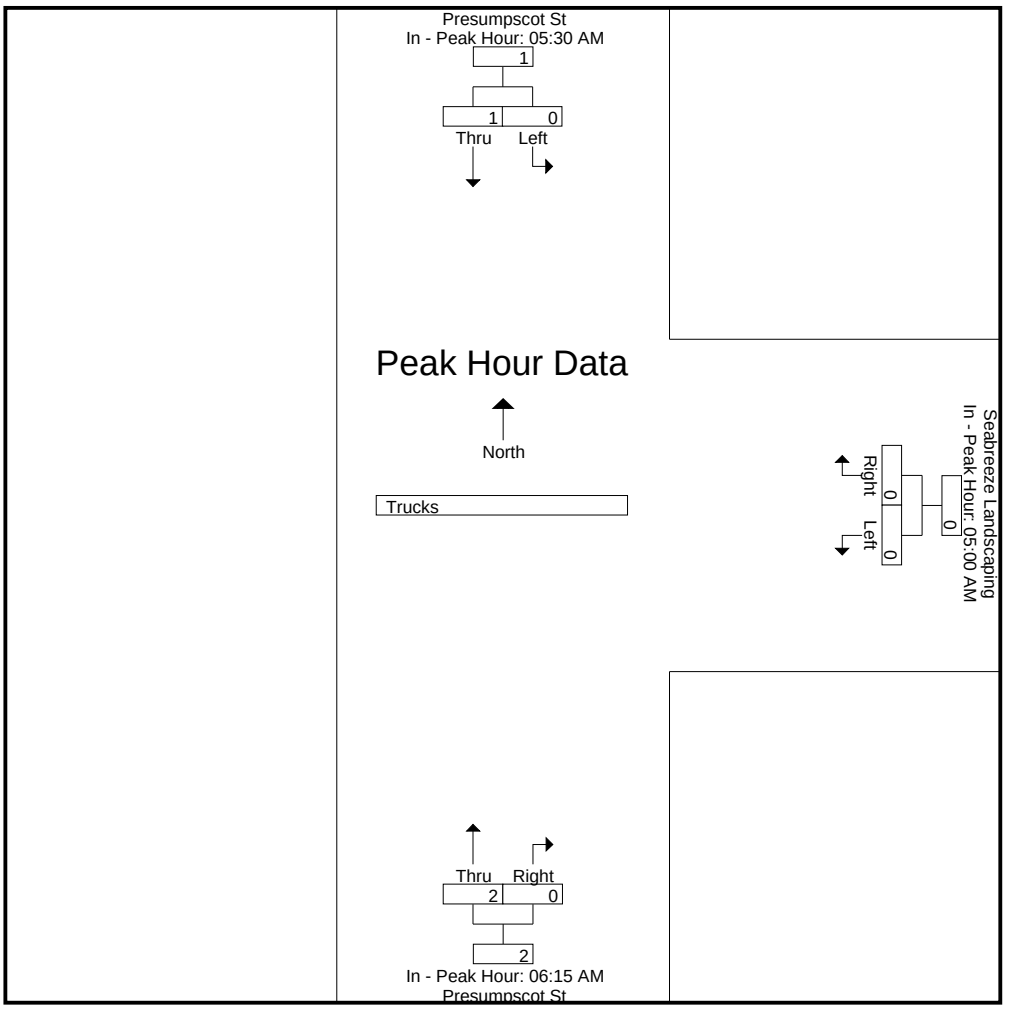
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 9

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:30 AM			05:00 AM			06:15 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	**1**	0	**1**
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	**1**	**1**	0	0	0	1	0	1
Total Volume	0	1	1	0	0	0	2	0	2
% App. Total	0	100		0	0		100	0	
PHF	.000	.250	.250	.000	.000	.000	.500	.000	.500



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Bikes Peds

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
05:45 AM	0	1	0	0	0	0	0	0	0	0	1	1
Total	0	1	0	0	0	0	0	0	0	0	1	1
06:00 AM	0	1	0	0	0	0	0	0	0	0	1	1
06:15 AM	0	0	0	0	0	0	0	1	0	0	1	1
06:30 AM	0	2	0	0	0	0	1	1	0	0	4	4
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	3	0	0	0	0	1	2	0	0	6	6
07:00 AM	0	2	0	0	0	0	0	0	0	0	2	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	2	0	0	0	2	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	0	0	2	0	0	0	4	4
Grand Total	0	6	0	0	0	0	3	2	0	0	11	11
Apprch %	0	100		0	0		60	40				
Total %	0	54.5		0	0		27.3	18.2		0	100	

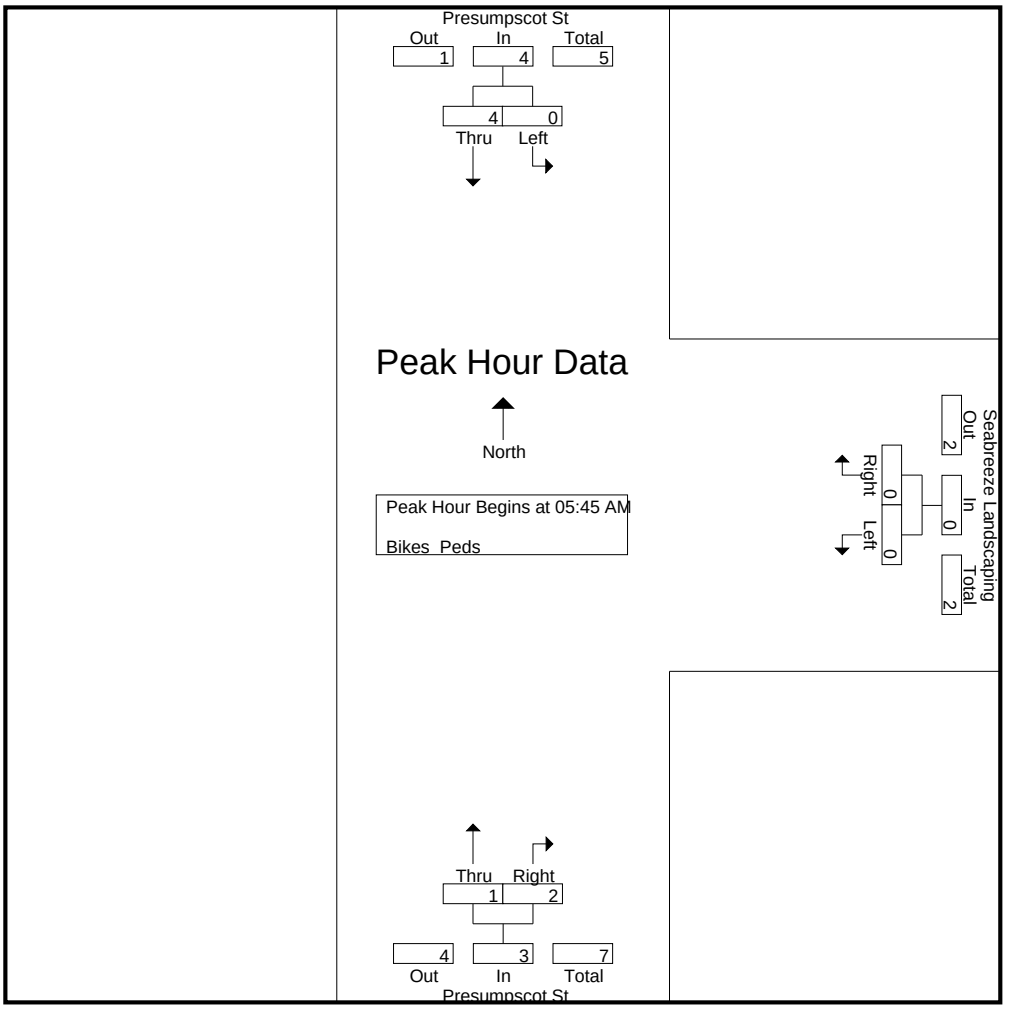
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 11

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:45 AM										
05:45 AM	0	1	1	0	0	0	0	0	0	1
06:00 AM	0	1	1	0	0	0	0	0	0	1
06:15 AM	0	0	0	0	0	0	0	**1**	1	1
06:30 AM	0	**2**	**2**	0	0	0	**1**	1	**2**	**4**
Total Volume	0	4	4	0	0	0	1	2	3	7
% App. Total	0	100		0	0		33.3	66.7		
PHF	.000	.500	.500	.000	.000	.000	.250	.500	.375	.438



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

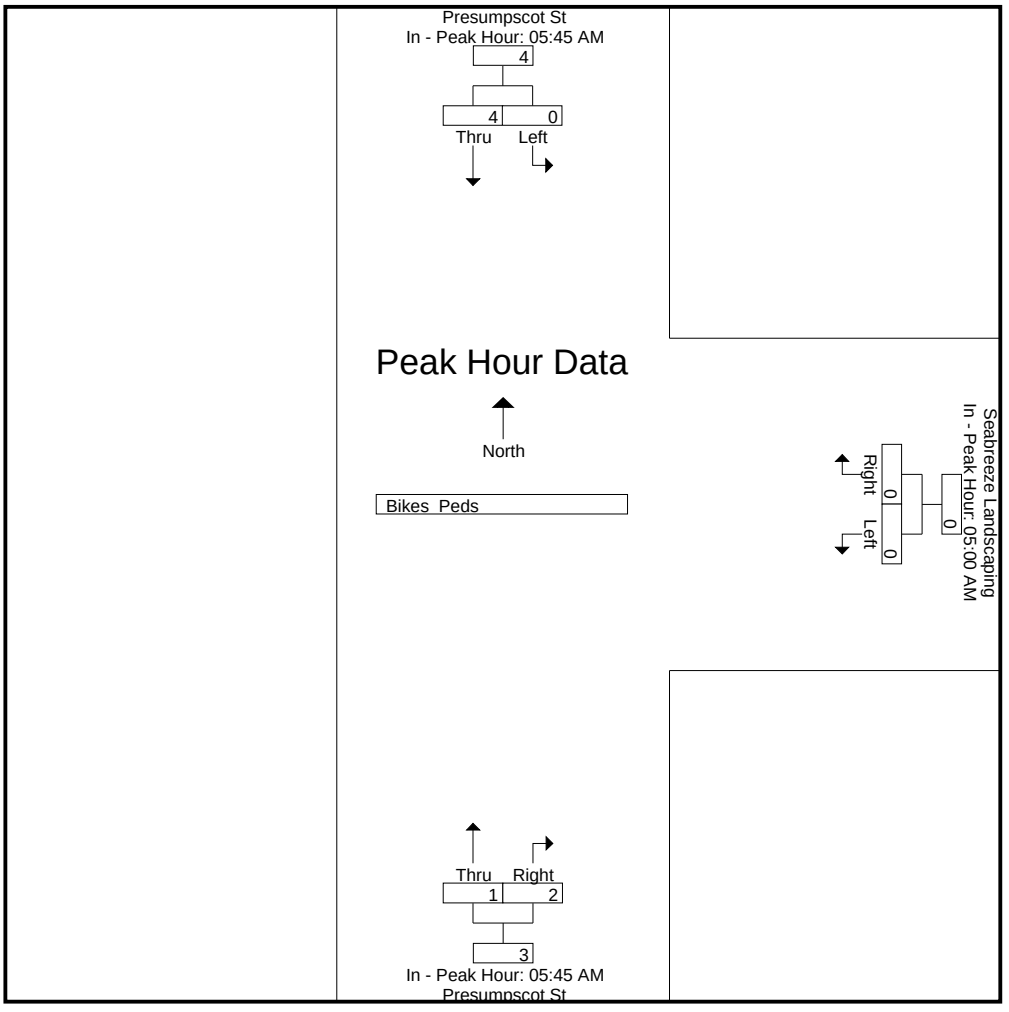
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 12

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 05:00 AM to 07:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:45 AM			05:00 AM			05:45 AM		
+0 mins.	0	1	1	0	0	0	0	0	0
+15 mins.	0	1	1	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	**1**	1
+45 mins.	0	**2**	**2**	0	0	0	**1**	1	**2**
Total Volume	0	4	4	0	0	0	1	2	3
% App. Total	0	100		0	0		33.3	66.7	
PHF	.000	.500	.500	.000	.000	.000	.250	.500	.375



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 1

Groups Printed- Cars - Trucks

	Presumpscot St From North		Seabreeze Landscaping From East		Presumpscot St From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
02:00 PM	0	26	0	0	38	1	65
02:15 PM	0	34	0	1	45	1	81
02:30 PM	0	26	1	0	41	2	70
02:45 PM	0	21	3	3	41	1	69
Total	0	107	4	4	165	5	285
03:00 PM	0	30	1	2	53	0	86
03:15 PM	0	32	0	0	61	3	96
03:30 PM	0	33	2	0	69	2	106
03:45 PM	0	30	3	2	81	1	117
Total	0	125	6	4	264	6	405
04:00 PM	1	32	0	1	101	1	136
04:15 PM	0	30	2	0	98	1	131
04:30 PM	1	23	0	0	78	0	102
04:45 PM	0	40	0	0	113	1	154
Total	2	125	2	1	390	3	523
Grand Total	2	357	12	9	819	14	1213
Apprch %	0.6	99.4	57.1	42.9	98.3	1.7	
Total %	0.2	29.4	1	0.7	67.5	1.2	
Cars	2	354	12	9	818	14	1209
% Cars	100	99.2	100	100	99.9	100	99.7
Trucks	0	3	0	0	1	0	4
% Trucks	0	0.8	0	0	0.1	0	0.3

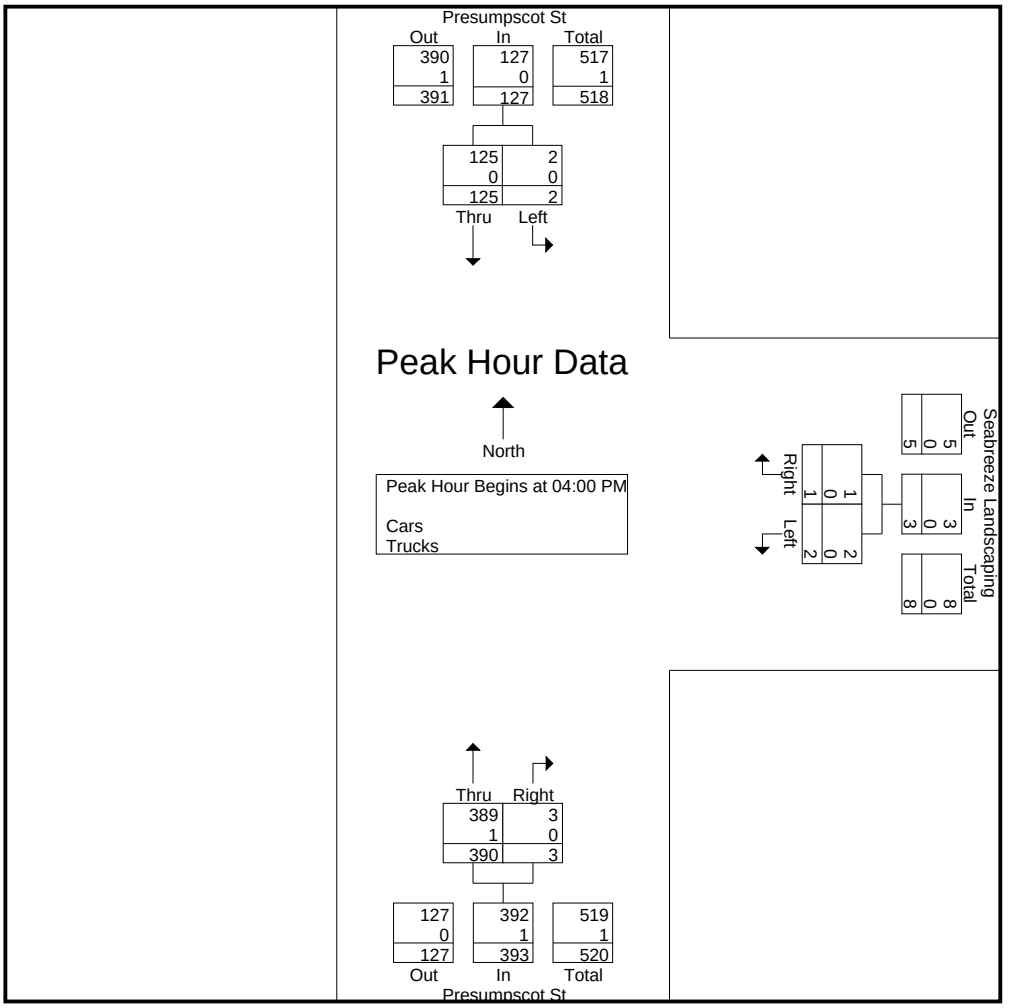
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 2

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**1**	32	33	0	**1**	1	101	**1**	102	136
04:15 PM	0	30	30	**2**	0	**2**	98	1	99	131
04:30 PM	1	23	24	0	0	0	78	0	78	102
04:45 PM	0	**40**	**40**	0	0	0	**113**	1	**114**	**154**
Total Volume	2	125	127	2	1	3	390	3	393	523
% App. Total	1.6	98.4		66.7	33.3		99.2	0.8		
PHF	.500	.781	.794	.250	.250	.375	.863	.750	.862	.849
Cars	2	125	127	2	1	3	389	3	392	522
% Cars	100	100	100	100	100	100	99.7	100	99.7	99.8
Trucks	0	0	0	0	0	0	1	0	1	1
% Trucks	0	0	0	0	0	0	0.3	0	0.3	0.2



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

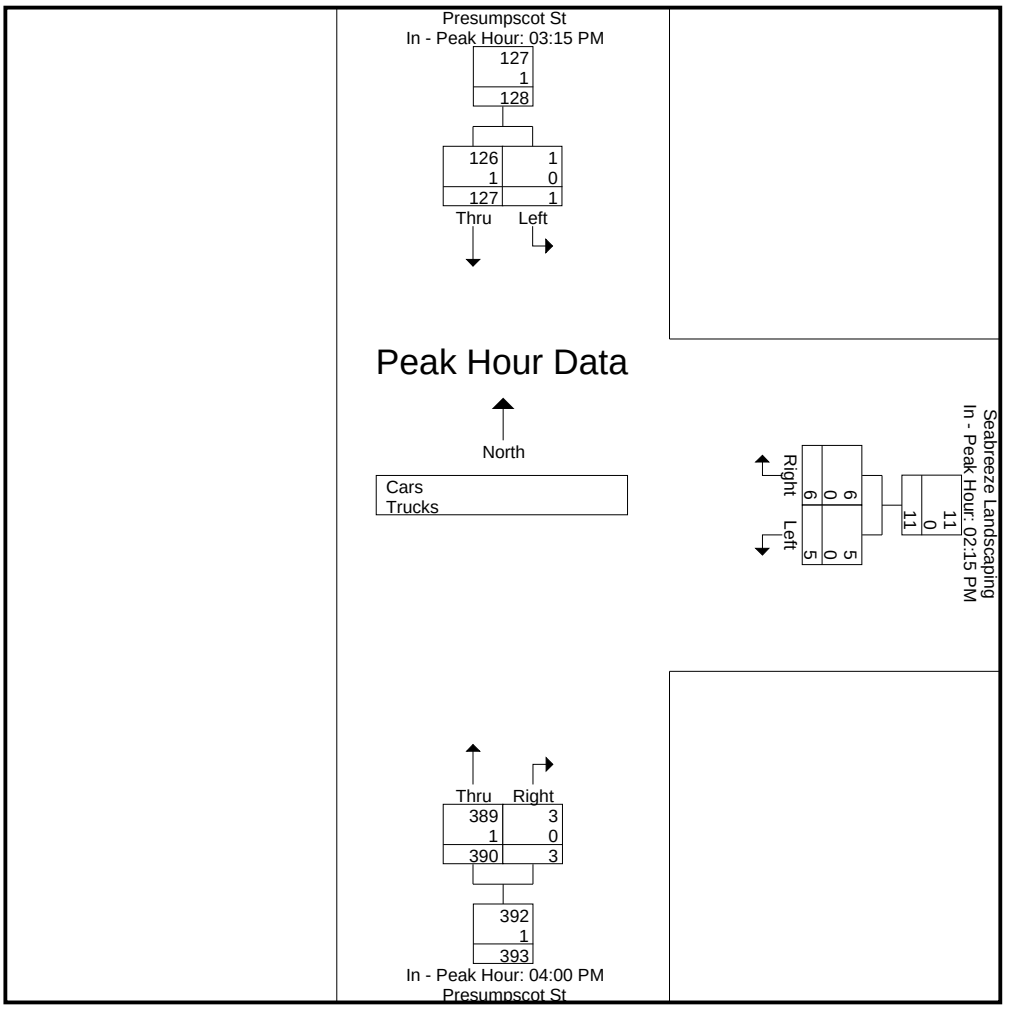
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 3

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:15 PM			02:15 PM			04:00 PM		
+0 mins.	0	32	32	0	1	1	101	**1**	102
+15 mins.	0	**33**	**33**	1	0	1	98	1	99
+30 mins.	0	30	30	**3**	**3**	**6**	78	0	78
+45 mins.	**1**	32	33	1	2	3	**113**	1	**114**
Total Volume	1	127	128	5	6	11	390	3	393
% App. Total	0.8	99.2		45.5	54.5		99.2	0.8	
PHF	.250	.962	.970	.417	.500	.458	.863	.750	.862
Cars	1	126	127	5	6	11	389	3	392
% Cars	100	99.2	99.2	100	100	100	99.7	100	99.7
Trucks	0	1	1	0	0	0	1	0	1
% Trucks	0	0.8	0.8	0	0	0	0.3	0	0.3



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Cars

	Presumpscot St From North		Seabreeze Landscaping From East		Presumpscot St From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
02:00 PM	0	26	0	0	38	1	65
02:15 PM	0	33	0	1	45	1	80
02:30 PM	0	25	1	0	41	2	69
02:45 PM	0	21	3	3	41	1	69
Total	0	105	4	4	165	5	283
03:00 PM	0	30	1	2	53	0	86
03:15 PM	0	32	0	0	61	3	96
03:30 PM	0	32	2	0	69	2	105
03:45 PM	0	30	3	2	81	1	117
Total	0	124	6	4	264	6	404
04:00 PM	1	32	0	1	101	1	136
04:15 PM	0	30	2	0	98	1	131
04:30 PM	1	23	0	0	78	0	102
04:45 PM	0	40	0	0	112	1	153
Total	2	125	2	1	389	3	522
Grand Total	2	354	12	9	818	14	1209
Apprch %	0.6	99.4	57.1	42.9	98.3	1.7	
Total %	0.2	29.3	1	0.7	67.7	1.2	

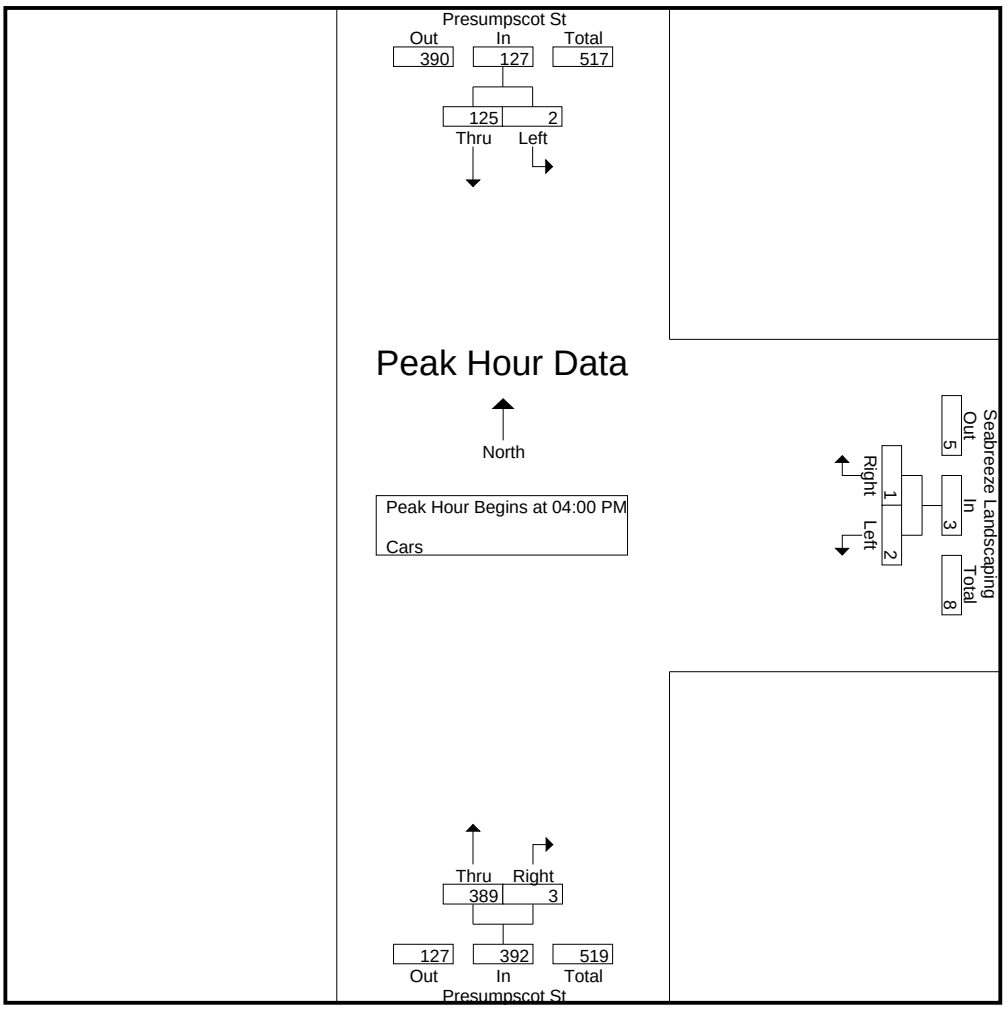
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 5

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	**1**	32	33	0	**1**	1	101	**1**	102	136
04:15 PM	0	30	30	**2**	0	**2**	98	1	99	131
04:30 PM	1	23	24	0	0	0	78	0	78	102
04:45 PM	0	**40**	**40**	0	0	0	**112**	1	**113**	**153**
Total Volume	2	125	127	2	1	3	389	3	392	522
% App. Total	1.6	98.4		66.7	33.3		99.2	0.8		
PHF	.500	.781	.794	.250	.250	.375	.868	.750	.867	.853



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

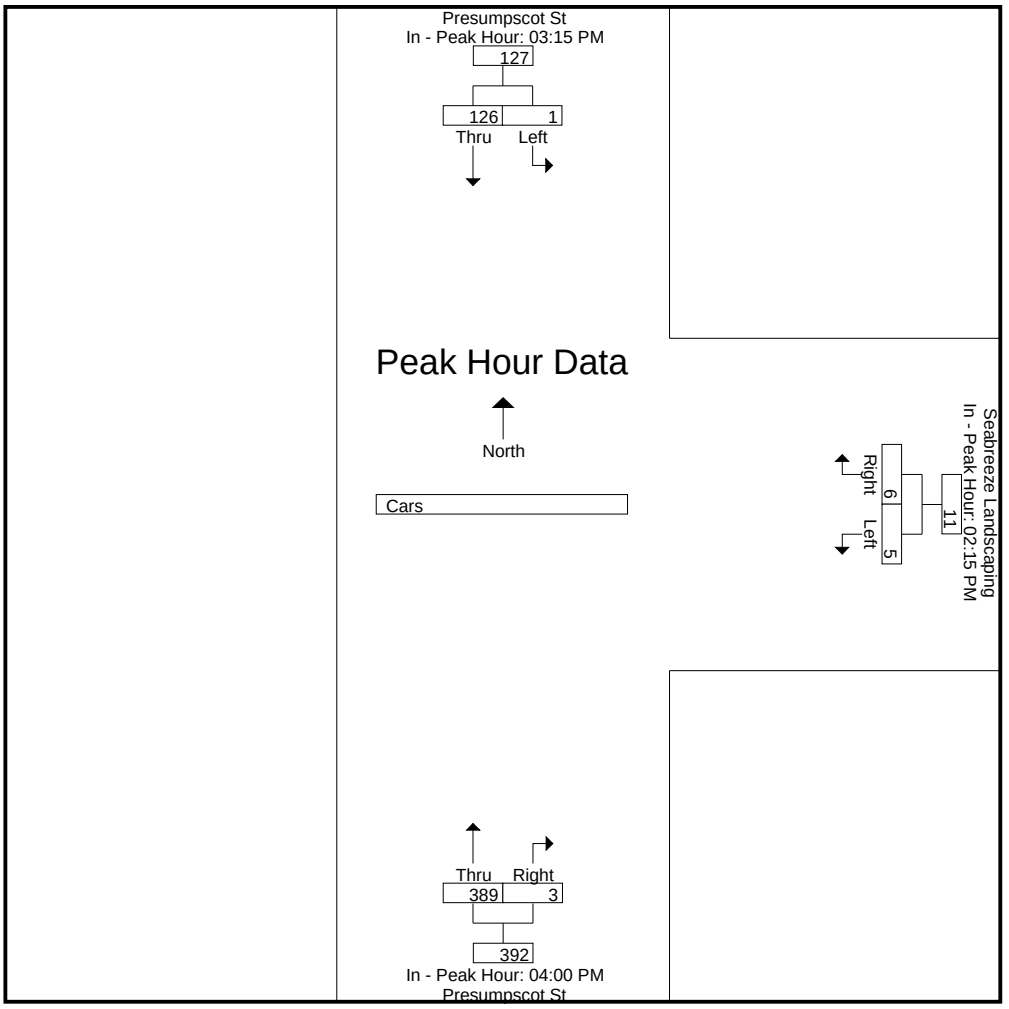
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 6

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:15 PM			02:15 PM			04:00 PM		
+0 mins.	0	**32**	32	0	1	1	101	**1**	102
+15 mins.	0	32	32	1	0	1	98	1	99
+30 mins.	0	30	30	**3**	**3**	**6**	78	0	78
+45 mins.	**1**	32	**33**	1	2	3	**112**	1	**113**
Total Volume	1	126	127	5	6	11	389	3	392
% App. Total	0.8	99.2		45.5	54.5		99.2	0.8	
PHF	.250	.984	.962	.417	.500	.458	.868	.750	.867



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Trucks

	Presumpscot St From North		Seabreeze Landscaping From East		Presumpscot St From South		
Start Time	Left	Thru	Left	Right	Thru	Right	Int. Total
02:00 PM	0	0	0	0	0	0	0
02:15 PM	0	1	0	0	0	0	1
02:30 PM	0	1	0	0	0	0	1
02:45 PM	0	0	0	0	0	0	0
Total	0	2	0	0	0	0	2
03:00 PM	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0
03:30 PM	0	1	0	0	0	0	1
03:45 PM	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	1
04:00 PM	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	1	0	1
Total	0	0	0	0	1	0	1
Grand Total	0	3	0	0	1	0	4
Apprch %	0	100	0	0	100	0	
Total %	0	75	0	0	25	0	

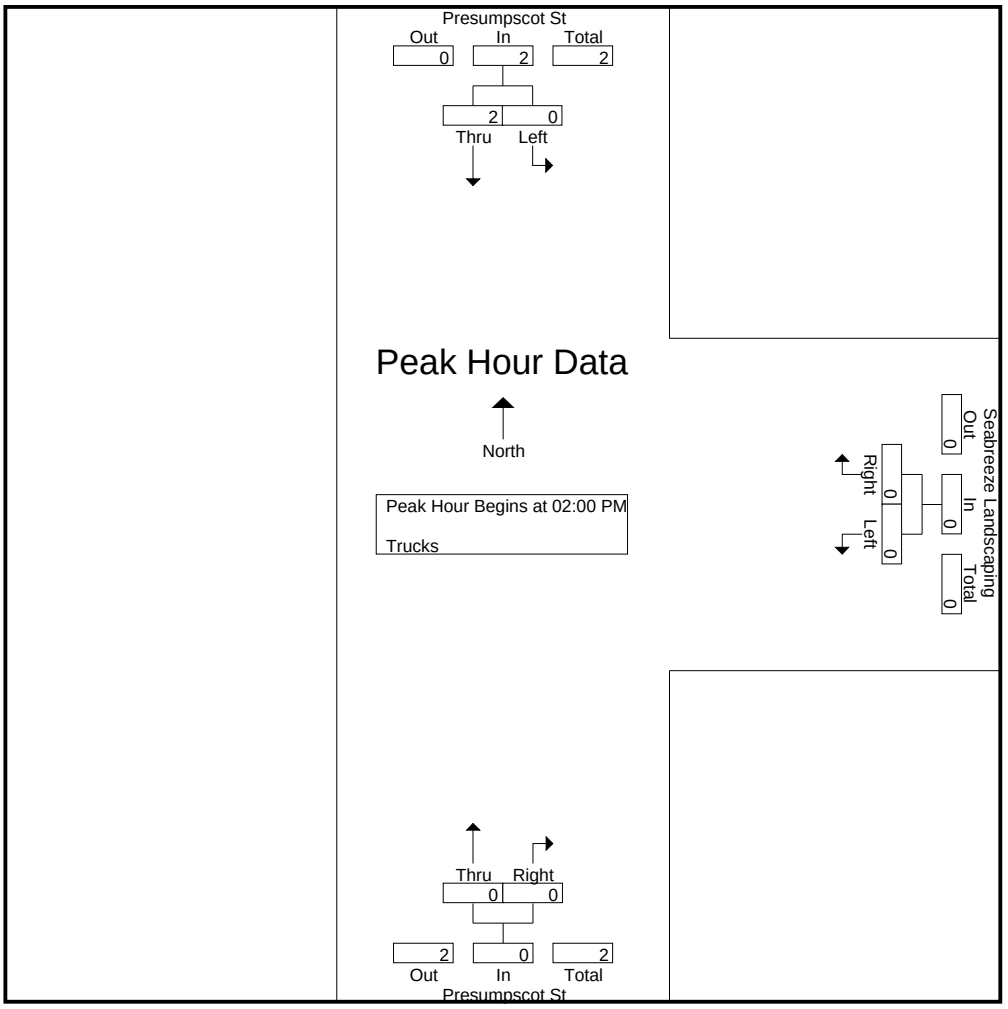
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 8

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:00 PM										
02:00 PM	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	**1**	**1**	0	0	0	0	0	0	**1**
02:30 PM	0	1	1	0	0	0	0	0	0	1
02:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	2	0	0	0	0	0	0	2
% App. Total	0	100		0	0		0	0		
PHF	.000	.500	.500	.000	.000	.000	.000	.000	.000	.500



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

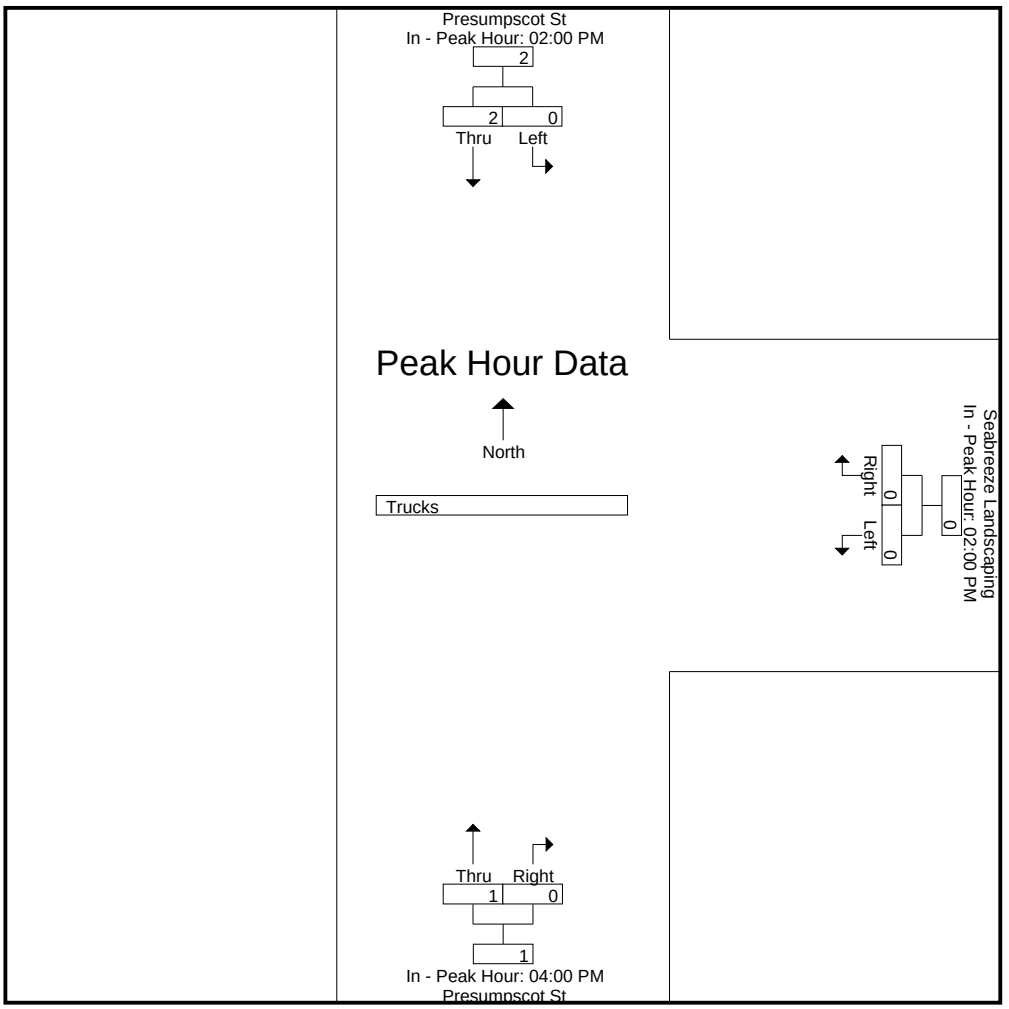
File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 9

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:00 PM			02:00 PM			04:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	**1**	**1**	0	0	0	0	0	0
+30 mins.	0	1	1	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	**1**	0	**1**
Total Volume	0	2	2	0	0	0	1	0	1
% App. Total	0	100		0	0		100	0	
PHF	.000	.500	.500	.000	.000	.000	.250	.000	.250



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018

Groups Printed- Bikes Peds

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South					
Start Time	Left	Thru	Peds	Left	Right	Peds	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	1	0	0	0	0	0	0	0	0	1	1
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	0	1	1
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	0	0	0	0	0	0	0	1	1
Apprch %	0	100		0	0		0	0				
Total %	0	100		0	0		0	0		0	100	

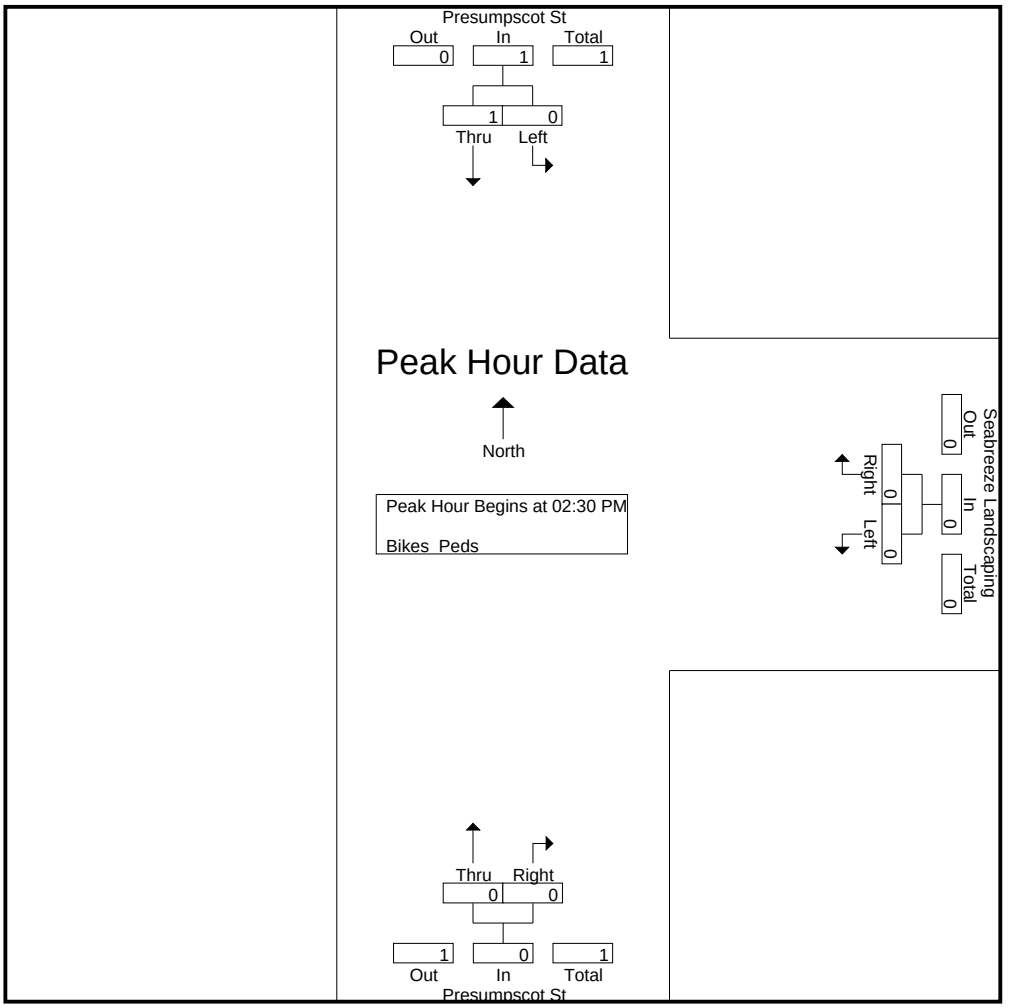
Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 11

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:30 PM										
02:30 PM	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	**1**	**1**	0	0	0	0	0	0	**1**
Total Volume	0	1	1	0	0	0	0	0	0	1
% App. Total	0	100		0	0		0	0		
PHF	.000	.250	.250	.000	.000	.000	.000	.000	.000	.250



Accurate Counts

978-664-2565

N/S Street : Presumpscot Street
E/W Street : Seabreeze Landscaping
City/State : Portland, ME
Weather : Clear

File Name : 13360001
Site Code : 13360001
Start Date : 6/26/2018
Page No : 12

	Presumpscot St From North			Seabreeze Landscaping From East			Presumpscot St From South			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 02:00 PM to 04:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:30 PM			02:00 PM			02:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	**1**	**1**	0	0	0	0	0	0
Total Volume	0	1	1	0	0	0	0	0	0
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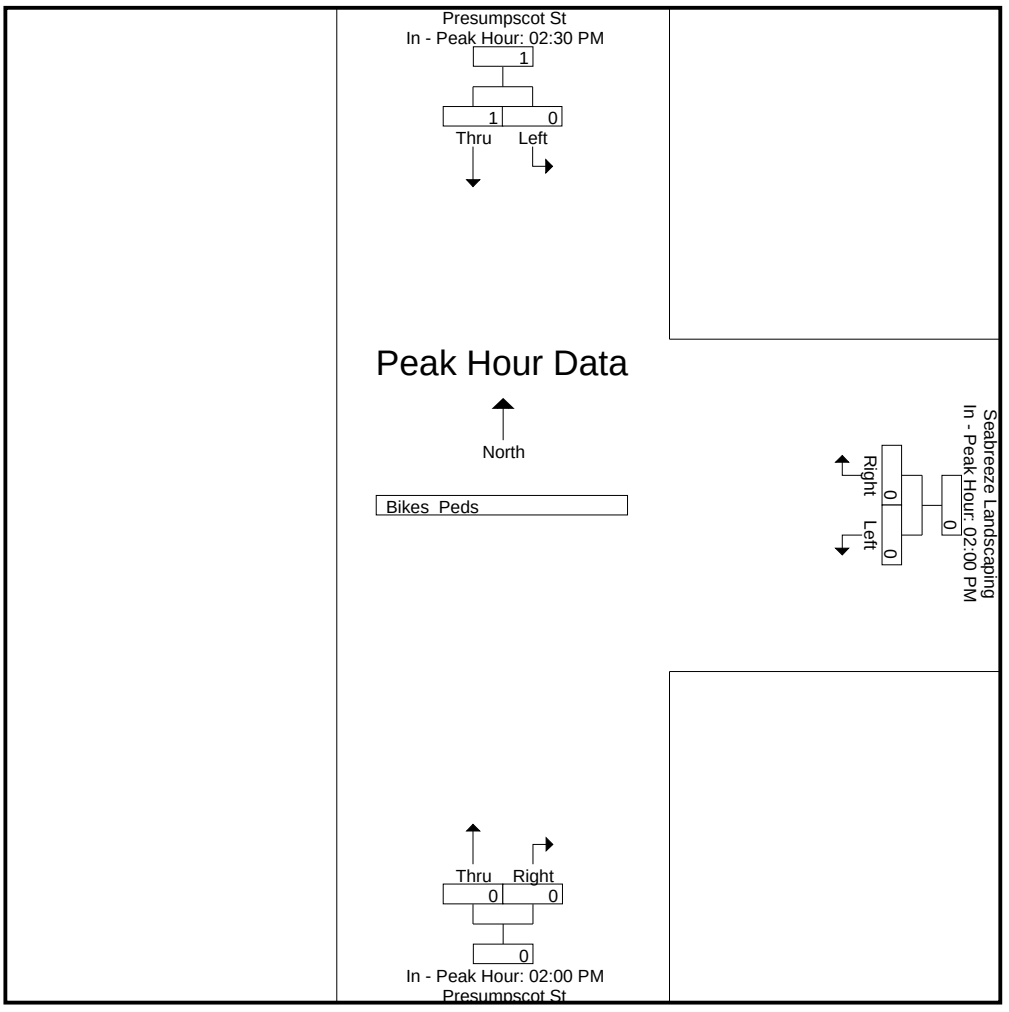


SEBAGO TECHNICS

December 12, 2018
16360

Jean Fraser, Planner
Planning & Urban Development Department
City of Portland
389 Congress Street
Portland, Maine 04101

Level III Site Plan Application, 250 Riverside Industrial Parkway,
Two Eisenhower Drive, LLC

Dear Jean:

The enclosed revised plans, this letter and associated information are provided to address the comments you raised in your memorandum to the Planning Board dated October 19, 2018.

A. Zoning Analysis:
The parking area containing the 26 parking spaces are provided for office personnel and vendors and provides more than the 15 parking spaces required by zoning. The additional parking spaces involve the field personnel who drive their personal vehicles to the facility and drive a company vehicle during working hours. The company vehicles are parked on the reserved gravel parking areas and the field personnel will park their personal vehicles during the day in the same space occupied by the company vehicles at night.

B. Site Location of Development Review:
b. Traffic Movement – Based upon the counts performed at the tenants existing facility, the applicant maintains that neither a Traffic Movement Permit nor a Traffic Impact Study is required.

c. No Adverse Impact on the Environment –
Wetlands: The wetlands have been field identified and located. The total wetland impact is 6850 square feet and consists of the filling of pocketed wetlands and a drainage swale to allow for the grading of the lot. The wetland impact has been minimized by crossing the brook at its narrowest wetland area.
Stream: The stream crossing consists of a box culvert that is 1.5 times the brook width to minimize the potential of concentrating the flow through the culvert. The bottom two feet of the box culvert will be embedded into the stream channel and gravel placed in the bottom to replicate the existing stream bed. The applicant will also contribute the compensation fee to the City CFUP established for Dole Brook.
Water Quality: Runoff from developed areas will be directed to a series of catch basins which will outlet to three underdrained soil filters to treat and detain the runoff prior to outletting the site. The runoff from the fuel island, which will be beneath a canopy, will be directed to an oil/water separator prior to discharging to the storm drain system.

Wooded areas: The Landscape Plan now designates the tree save areas, additional tree buffering is now shown along the Maine Turnpike and a landscape area delineates the paved parking from the storage yard.
Bats: The construction management plan and schedule have been updated to preclude tree cutting during the rearing season for bat pups.

Please note attached responses to review comments for additional information regarding infrastructure and storm water management.

C. Site Plan Review:

Transportation Standards
a. Impact on Surrounding Street System
Sebago Technics, Inc. has completed an assessment of expected trip generation from the project. This information is included for review and consideration. The MaineDOT determines the need for a Traffic Movement Permit (TMP) based on the passenger car equivalent (PCE) trips to be generated by the proposed development. Based on City standard, the development also does not require a Traffic Impact Study. As the site is located within an industrial area of the City with a signalized intersection at the Forest Street intersection, no significant adverse impacts are anticipated on the surrounding street system due to the proposed development.
b. Access and Circulation and c. Loading and Servicing
The plan has been revised to include a landscape area to delineate the paved parking from the yard area and a painted pedestrian access is proposed along the drive to connect the proposed parking and the proposed sidewalk along Riverside Industrial Parkway.
c. Sidewalks and Curbing
The plan has been revised to include a 5 foot esplanade along the existing edge of pavement of Riverside Industrial Parkway and a 5 foot bituminous sidewalk along the street frontage of the property. It was our understanding that City Staff were comfortable with the proposal of installing a sidewalk along the street without the curbing and associated drainage system such that the roadway runoff would continue to sheet through the wooded areas to the brook. This sidewalk connects to a painted pedestrian access 4 feet wide along the 24 foot wide access drive to the site.
h. Construction Management Plan
The plan has been updated to specifically reference that no tree cutting shall occur during the time the bats rear their young.

2. Environmental Quality Standards
b. Landscaping, and Landscape Preservation, including buffering, parking lot landscaping and street trees
Street Trees and Tree Preservation: The tree save areas are identified on the site plan and landscape plan as requested.
Landscape Buffer: A landscaped buffer is now shown on the landscaping plan.
Parking Lot Landscaping: A landscaped strip is now shown to delineate the paved parking area from the proposed gravel yard as requested.

3. Public Infrastructure and Community Safety Standards
SMH-1 is now proposed as an internal drop manhole which will be owned and maintained by the applicant and will allow for a standard connection to the existing City sewer manhole by core boring a new inlet into the structure.

b. Public Safety and Fire Prevention
A new utility pole is proposed to be installed near the driveway entrance to allow for the installation of the underground electric service to the facility. A new light fixture is proposed to be installed on this pole to illuminate the driveway entrance. The yard area consisting of vehicle and equipment storage i9s completely fenced in, and building mounted light fixtures are proposed to illuminate the area along the perimeter of the building and the paved parking area. The tenant does not require additional illumination of the site.

4. Site Design Standards
As discussed, the site lighting is proposed to consist of a pole mounted fixture at the driveway entrance and building mounted fixtures for the site.

We look forward to working with the City and Planning/Engineering staff through the permitting process for the proposed property services building to be located on Riverside Industrial Parkway. As always, please contact me if you have any questions or require further information.

Sincerely,

SEBAGO TECHNICS, INC.

Shawn M. Frank, PE
Senior Project Manager

SMF/skn

enc.

SEBAGO TECHNICS

December 11, 2018
16360

Jean Fraser, Planner
Planning & Urban Development Department
City of Portland
389 Congress Street
Portland, ME 04101

Response to Arborist Review Comments, Level III Site Plan Application
250 Riverside Industrial Parkway, Two Eisenhower Drive, LLC

Dear Jean:

The enclosed revised plans and this letter are provided in response to the review comments regarding the above referenced application as contained in a memorandum to you from Jeff Tarling, City Arborist. We have organized the responses to restate each review comment followed by our response.

1. *The proposed site is near sensitive drainage area that flows into the Presumpscot River eventually. Environmental stewardship and sensibility should be factored in for a site like this, and Seabreeze as one of prominent landscape businesses in greater Portland should be adapt at creating and maintaining this space.*

   Response: The grading design of the site directs all stormwater runoff from the developed areas of the property to grassed underdrained soil filters for stormwater treatment prior to outletting to the stream. Each treatment area has a sediment forebay to collect sediment before treatment, and these areas will be maintained as part of a maintenance agreement with the City of Portland.

2. *The employee and visitor parking for vendors should be defined and separated from the regular equipment storage area. The equipment and storage area should be defined and fenced considered for security reasons. Material storage areas should be organized and include concrete barriers and paved surface to keep bulk material and site features clean. Winter sand / salt storage should follow industry standards - covered storage away from drainage flows to local streams.*

   Response: A landscaped strip is now defined on the plans to separate the visitor parking area and the storage areas. The equipment and storage areas are fenced for security. Material storage areas will be maintained to drain only toward stormwater treatment areas and not directly to the stream. The tenant has indicated that winter salt storage occurs off-site. The vast majority of material and landscape stockpiles will be placed on the concrete pad indicated on the site plan and called out as "Landscape Material Stockpiling Area" and will be separated with concrete block barriers. Maintenance of the site by the tenant will occur on a daily basis.

3. *Tree & Landscape - the amount of exposed open, non-vegetated, gravel or paving area for this site is excessive, and likely has operational uses that are less defined on the landscape plan. Areas not intended for immediate use should be transformed into field area to provide vegetated cover.*

Response: The areas and their respective uses have been further defined on the plans. The non-vegetated gravel areas are required for vehicular and equipment storage.

4. *The area near the front office space should have some degree of landscape treatment as common to commercial buildings, especially a landscape firm. This can include trees and shrubs, native plantings along the edges. The Maine Turnpike edge should contain a treed or vegetated buffer from the highway view. Gravel wetlands or stormwater features should have naturalized vegetation nearby.*

   Response: The enclosed Landscape Plan includes additional plantings in the office area and a vegetated buffer along the Maine Turnpike frontage as requested.

We are hopeful that we have adequately addressed the review comments such that the site plan may be approved by the Planning Board. Upon your review of this submission, however, please call with any questions or if you require additional information. Thank you for your consideration.

Sincerely,

SEBAGO TECHNICS, INC.

Shawn M. Frank, P.E.
Senior Project Manager

SMF/llg
Enc.

SEBAGO TECHNICS

December 11, 2018
16360

Jean Fraser, Planner
Planning & Urban Development Department
City of Portland
389 Congress Street
Portland, ME 04101

Response to Water Resources Review Comments, Level III Site Plan Application
250 Riverside Industrial Parkway, Two Eisenhower Drive, LLC

Dear Jean:

The enclosed revised plans and this letter are provided in response to the review comments regarding the above referenced application as contained in a memorandum to you from Benjamin Pearson of Water Resources. We have organized the responses to restate each review comment followed by our response.

1. *The facility will likely require a Maine Multi-Sector General Permit (MSGP) for Industrial Stormwater Discharge Associated with Industrial Activity and a Stormwater Pollution Prevention Plan (SWPPP) to help mitigate potential impacts to water quality in Dole Brook and the Presumpscot River. The site is within the Dole Brook Watershed, an Urban Impaired Stream with a ME Water Quality Standard of Class B. The site will also need to meet the UIS Standard under Chapter 500, which can be accomplished through additional stormwater mitigation or through Portland's approved Compensation Fee Utilization Plan for Dole Brook.*

   Response: The tenant has retained the services of St. Germain Collins to prepare the required environmental plans and permits associated with the fuel island including the SWPPP and SPCC Plan. As the site is within the Dole Brook Watershed and as the City has an approved CFUP, the applicant proposes to contribute to the CFUP in accordance with the enclosed calculation.

2. *Given the proposed use and sensitive nature of this UIS Watershed, material handling needs to be in a controllable manner. At both of Sea Breeze's previous sites, the City has had to deal with multiple issues related to runoff and material leaving the site. This was as recent as summer 2018. Wherever piles of material are going to be stored, appropriate measures need to be in place to manage those materials and runoff from them. Ideally, the materials would be covered. In the same vein, the fuel island needs secondary containment for any spills should be covered with a canopy to prevent spilled fuel from entering into stormwater infrastructure with runoff. Both of these items should be covered under the Industrial Stormwater Discharge Permit and Stormwater Prevention Plan required for a site like this as described above.*

   Response: The fuel island will contain secondary containment and the area will be covered with a canopy. Runoff from this area will flow through an oil/water separator prior to discharging into the storm drain system. The intent of the site design is to provide the required area for the storage of the tenants' landscape materials, while directing all runoff to stormwater management areas for treatment prior to outletting the site.

3. *There should be significant concern about the design of the box culvert, as shown, given the volume of flow in this channel, which is already causing down-cutting and stream bank erosion.*

The width of the box culvert barely covers the width of the existing stream bed. This could serve as a flow constriction that would increase the velocity and energy of the flow at the culvert outlet which, as it happens, is directed toward the eastern stream bank, because the culvert does not account for the bend in the stream. This design is likely to result in significant scouring and stream bank erosion at the downstream end of the culvert. Furthermore, growth in this area is likely to result in additional runoff and flow to this section of Dole Brook that would exacerbate these problems and result in further degradation of the stream and water quality. The culvert should be widened and account for the nearby bend in the stream to limit scouring and bank erosion.

Response: The width of the existing channel has been obtained by survey to be 10 feet in width. The box culvert proposed is 15 feet wide to provide 1.5 times the size of the original stream width rather than the 1.2 standard to minimize the potential for flow constriction. The location of the driveway is proposed within an area with a well-defined channel that limits wetland impacts. The stream does turn approximately 40 feet below the box culvert outfall, however, we have attempted to minimize the impact by proposing a wider box culvert. The applicant will coordinate with Water Resources if they determine that additional measures should be proposed in this area.

We are hopeful that we have adequately addressed the review comments such that the site plan may be approved by the Planning Board. Upon your review of this submission, however, please call with any questions or if you require additional information. Thank you for your consideration.

Sincerely,

SEBAGO TECHNICS, INC.

Shawn M. Frank, P.E.
Senior Project Manager

SMF/llg
Enc.

SEBAGO TECHNICS

December 11, 2018
16360

Jean Fraser, Planner
Planning & Urban Development Department
City of Portland
389 Congress Street
Portland, ME 04101

Response to Peer Engineer Review Comments, Level III Site Plan Application
250 Riverside Industrial Parkway, Two Eisenhower Drive, LLC

Dear Jean:

The enclosed revised plans and this letter are provided in response to the peer engineer review comments for the above referenced application as contained in a memorandum to you from Woodard and Curran. We have organized the responses to restate each review comment followed by our response.

1. *The Applicant should clarify he amount of wetland impacts. The number varies within the application materials and on the plans.*

   Response: The wetlands depicted on the plans have now been field identified and located by Sebago Technics, Inc., such that the total wetland impact is 6,850 sf as noted on the plans.

2. *The SLODA notes that the Maine Construction General Permit will be reviewed as part of the SLODA application. Please note that the SLODA is being reviewed by the City of Portland as part of Delegated Review Authority, and the Maine Construction General Permit will still be required through the Maine DEP.*

   Response: Form A of the SLODA covers the requirements of the Maine Construction General Permit and the intent of the applicant to perform all necessary work in accordance with the requirements of the MCGP standards. As the MDEP received a complete copy of this application with the City of Portland Delegated Review Authority, we consider this comment resolved.

3. *The project is in the Dole Brook Watershed, which is an Urban Impaired Stream. The Applicant should provide additional information on how the project will meet the Urban Impaired Stream Standard.*

   Response: As Dole Brook is an Urban Impaired Stream, the applicant proposes to contribute to the Compensation Fee Utilization Program for Dole Brook in accordance with the enclosed supporting calculation of the fee.

4. *The standard maximum filter area size for underdrain soil filters, per the Maine DEP BMP standard is 3,000 SF. Two of the proposed filters exceed this area.*

   Response: Section 7.1 Grassed Underdrained Soil Filters states "The filter area should not exceed or have more than 2.5 acres of sub watershed draining to the structure. "

   The two basins that are over the 3,000 SF guideline are 3,050 SF and 3,079 SF. with a contributing area of approx. 1.6 acres each which is much less than 2.5 acres. As such, we believe that the basin design meets the standard.

5. *The stormwater model includes vertical orifices for the underdrain soil filters ranging in size from 1" to 3.5". The plans and details do not identify these orifices. Please clarify their use, include them in the design details, and specifically identify any maintenance requirements associated with the orifices in the Inspection and Maintenance Plan.*

   Response: These orifices are provided to meet the drain time requirement that "a filter basin must drain dry in no less than 24 and no more than 48 hours." The location of this vertical orifice is within the CB of each soil filter, respectively. Additional information/detail is included in the plans to depict the orifices and their maintenance requirements.

6. *For the final plans, the Underdrained Soil Filter Detail included on sheet 9 should be updated with project-specific elevation information for the project.*

   Response: The detail has been updated to include a table with elevations specific to each soil filter, on sheet 9 and on the Pond Construction Plan, Sheet 6.

7. *It appears based on site grades that there will be some offsite runoff onto the project site, including into Underdrained Soil Filter 2. The plans do not show offsite areas. Please clarify.*

   Response: The referenced off-site areas are actually intercepted by existing storm drains and do not impact the soil filter such that we believe the watershed areas shown are correct.

8. *Per the City's Technical Manual, where driveways enter onto an existing street, the full radius of the driveway shall be designed and constructed of granite curb. The current design calls for bituminous curbing.*

   Response: Driveway radii are now shown as granite curb to match the City's standards. All other curbing will be bituminous, as shown on the Site Plan.

9. *Verify that adequate cover is provided, both for frost protection, and installation of pipes into catch basins. It appears that there is 2.3' of cover at CB-4 and 1.34' of cover at CB-6.*

   Response: The drainage system has been adjusted to provide more cover in these areas.

10. *Please clarify how SMH-1 will be tying into the existing sewer that crosses the site within the Presumpscot North Interceptor easement. The structure table notes an invert into this manhole from the proposed site sewer that is almost 17 feet higher than the inverts of the existing sewer. In addition to an ability to serve confirmation, the Applicant will need to provide verification that the connection methodology, and all proposed improvements within the easement are acceptable.*

    Response: SMH-1 is proposed to be a drop manhole with an invert in at elevation 41.8 and an invert out of 31.8 to allow for a standard connection to occur within the City manhole and the maintenance of the drop manhole to remain with the applicant.

11. *The existing sewer manhole SMH 1083 is located in an area with significant proposed grading with a 1.5:1 sides slope. Additional information should be provided on modifications to this manhole, and any stabilization required to maintain the structure within the steeply sloped area.*

    Response: The existing manhole is anticipated to be brought to grade by the installation of additional risers and that the slope will be stabilized in accordance with the detail provided by the geotechnical consultant.

    Please provide additional information on stabilization fabrics and rip rap sizing, in particular for the area identified with 1.5:1 sizing. Verify that the materials selected for stabilization in these steep areas are adequate for the proposed slopes. The landscape plan should also be reconciled with the grading plan, as it appears that seeding is identified in areas of riprap.

Response: The geotechnical consultant has recommended a detail for the stabilization of the slope which is included on the plans.

12. *A stormwater maintenance agreement with the City of Portland will be required.*

Response: The applicant understands that a stormwater maintenance agreement with the City will be required.

We are hopeful that we have adequately addressed the engineering peer review comments such that the site plan may be approved by the Planning Board. Upon your review of the submission, however, please call with any questions or if you require additional information. Thank you for your consideration.

Sincerely,

SEBAGO TECHNICS, INC.

Shawn M. Frank, P.E.
Senior Project Manager

SMF/llg
Enc.

Portland Maine | Yes. Google's good here.

Jean Fraser <jf@portlandmaine.gov>

RE: Urgent - UIS calcs seem to be missing

1 message

Shawn Frank <sfrank@sebagotechnics.com> Wed, Jan 2, 2019 at 2:50 PM
To: Jean Fraser <jf@portlandmaine.gov>

Good Afternoon Jean:

The CFUP contribution based upon the enclosed Table 1 from Chapter 501 as published by the MDEP is calculated as follows:

Pavement/Gravel: 135,182 sf = 3.103 acres x $12,500/acre = $38,791.90

Building: 11,200 sf = 0.257 acres x $5000/acre = $1285.58

Landscape Area: 72,880 sf = 1.673 acres x $2500/acre = $4182.74

Total = $44,260.22

From: Jean Fraser [mailto:jf@portlandmaine.gov]
Sent: Wednesday, January 02, 2019 11:29 AM
To: Shawn Frank <sfrank@sebagotechnics.com>
Subject: Urgent - UIS calcs seem to be missing

Shawn

As I noted, we undertook the final review today and the Peer Engineer has been able to review the response letter that you sent on 12/24 - but could not find the calculations supporting the UIS contribution that is referenced in the responses. It would be helpful (ie would make the condition less complicated) if you could send those calculations this afternoon.

MAINE TURNPIKE AUTHORITY

INDUSTRIAL PARKWAY

RICE STREET

MILLIKEN STREET

TUKEY AVENUE

BEVERLY STREET

RIVERSIDE STREET

COMPANY TERMINAL

PORTLAND WATER DISTRICT

Land Now or Formerly Rufus H. Jones

Land Now or Formerly Rufus H. Jones

Land Now or Formerly Rufus H. Jones

LOT 1

LOT 2

LOT A

LOT C

LOT 'B'

100' Sewer Right of Way

75' Sewer Right of Way

Portland Water District Right of Way

Greater Portland Building Fund Inc. To City of Portland Rec. Bk. 3102 Pg. 324 Dec. 18, 1970

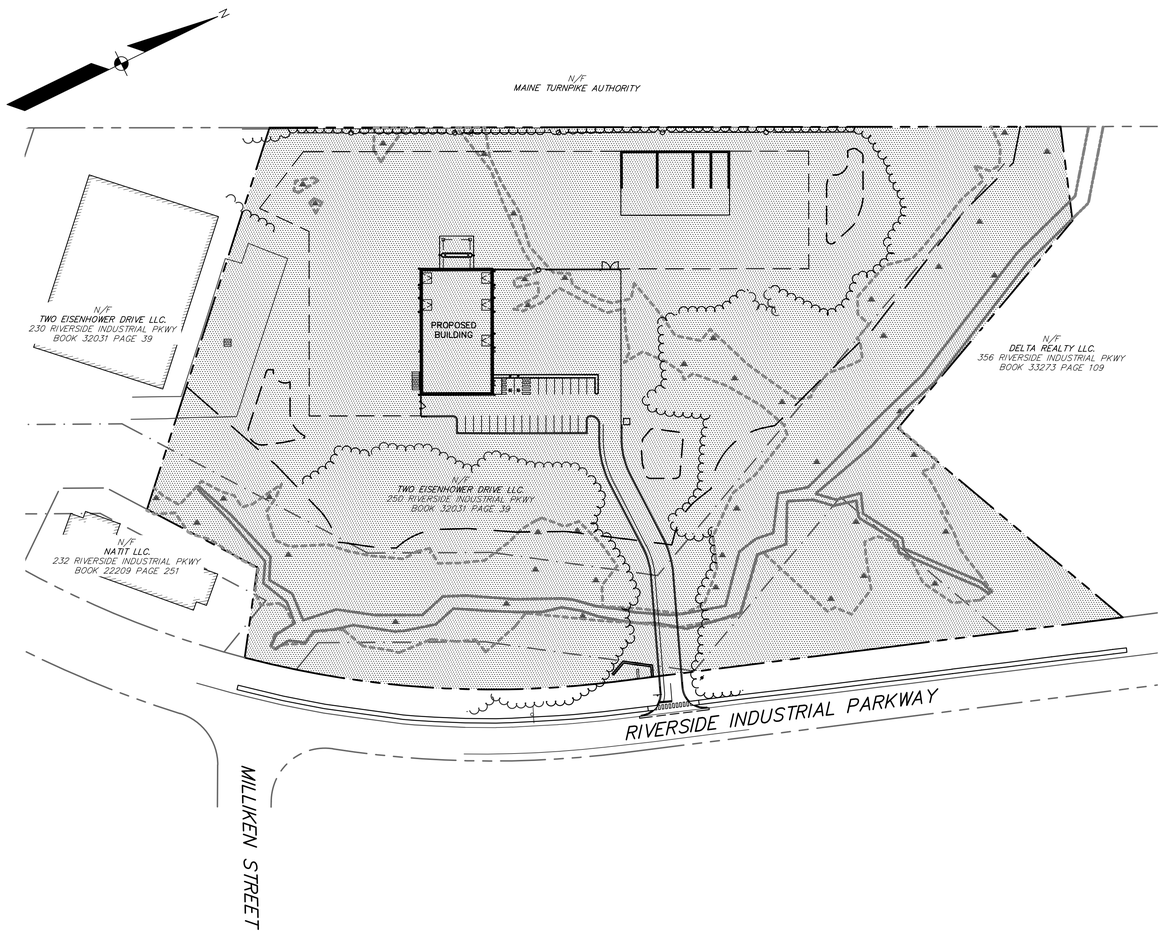
250 RIVERSIDE INDUSTRIAL PARKWAY

RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE

OWNER/APPLICANT:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

ENGINEER/SURVEYOR/ LANDSCAPE ARCHITECT:

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100



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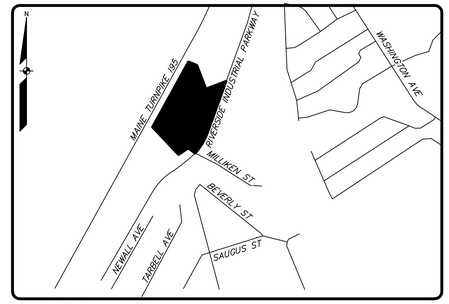


LOCATION MAP NTS

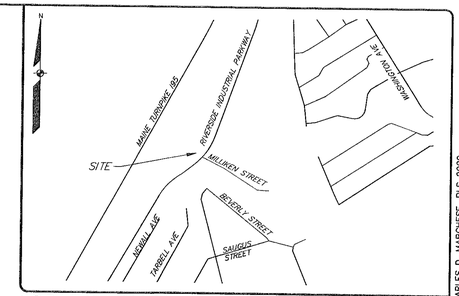
SHEET INDEX

SHEET	DESCRIPTION
1	COVER SHEET
2	EXISTING CONDITIONS PLAN
3	SITE PLAN
4	UTILITY PLAN
5	GRADING AND EROSION CONTROL PLAN
6	POND CONSTRUCTION PLANS
7	DETAILS
8	DETAILS
9	DETAILS
10	LANDSCAPING PLAN
11	PRE-DEVELOPMENT WATERSHED PLAN
12	POST-DEVELOPMENT WATERSHED PLAN

REVISED THROUGH 12-18-18

16360 C.dwg, TAB: COVER





LOCATION MAP N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS TWO EISENHOWER DRIVE LLC., BY DEED DATED JANUARY 10, 2015 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 32031, PAGE 39.
2. THE PROPERTY IS SHOWN AS LOT B001 ON THE CITY OF PORTLAND TAX MAP 330A AND IS LOCATED IN THE IM DISTRICT.
3. SPACE AND BULK CRITERIA FOR THE IM DISTRICT ARE AS FOLLOWS:

NET RESIDENTIAL DENSITY:	
MINIMUM LOT SIZE:	10,000 SQ. FT.
MINIMUM STREET FRONTAGE:	60 FT.
MINIMUM FRONT YARD:	1 FT. PER 1FT. HEIGHT OF BUILDING (MAX 25 FT.)
MINIMUM SIDE YARD:	1 FT. PER 1FT. HEIGHT OF BUILDING (MAX 25 FT.)
MINIMUM REAR YARD:	1 FT. PER 1FT. HEIGHT OF BUILDING (MAX 25 FT.)
MAXIMUM BUILDING HEIGHT:	75 FT.
MAXIMUM IMPERVIOUS RATIO:	75%

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 12.4 ACRES.
5. NO INDEPENDENT BOUNDARY RETRACEMENT SURVEY WAS PERFORMED BY SEBAGO TECHNICS, INC. BOUNDARY INFORMATION SHOWN IS BASED SOLELY UPON INFORMATION FROM PLAN REFERENCE 7A.
6. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. ON MARCH 20, 2018 AND IN PART FROM A WORKSHEET PROVIDED BY NORTHEAST CIVIL SOLUTIONS.
7. PLAN REFERENCES:
   A. CONCEPTUAL SITE PLAN FOR COMMERCIAL/INDUSTRIAL DEVELOPMENT FOR RECORD OWNER R.M. DAVIS, INC. C/O ARTHUR DORDUAS" PREPARED BY NORTHEAST CIVIL SOLUTIONS, DATED JULY, 2010.
7. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83. ELEVATIONS DEPICTED HEREON ARE NAVD88 BASED ON DUAL FREQUENCY GPS OBSERVATIONS. TO CONVERT TO THE CITY OF PORTLAND DATUM, ADD 0.69 FEET BASED ON U.S. ARMY CORPS OF ENGINEERS CORPSCON 6.0.1 SOFTWARE IN THIS VICINITY.
8. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
9. WETLAND INFORMATION DEPICTED HEREON WAS TAKEN FROM PLAN REFERENCE 7A. THE WETLANDS ON THIS SITE WERE REVIEWED AND UPDATED ON JULY 25, 2018 BY GARY M. FULLERTON, CSS OF SEBAGO TECHNICS, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND 2012 NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. ALL WETLAND FLAGS WERE LOCATED USING A GPS BACKPACK UNIT CAPABLE OF SUBMETER ACCURACY.

SURVEYOR'S STATEMENT

THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT WAS DONE IN ACCORDANCE WITH CHAPTER 90, PART 1 (PROFESSIONAL STANDARDS OF PRACTICE) AND PART 2 (TECHNICAL STANDARDS OF PRACTICE) OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS.

CHARLES D. MARCHESE, PLS 2009 *JULY 17, 2018*

STATE OF MAINE * CHARLES D. MARCHESE * 2009 * REGISTERED PROFESSIONAL LAND SURVEYOR

CHARLES D. MARCHESE, PLS 2009

DRAWN	CHECKED
MAC/BKW	CDM

REV.	BY:	DATE:	STATUS:
C	CDM	7-25-18	REVIEWED WETLAND UPDATE & EDITED NOTE 9
B	SMF	7-13-18	ISSUED TO CITY
A	BKW	3-28-18	ISSUED FOR CLIENT REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

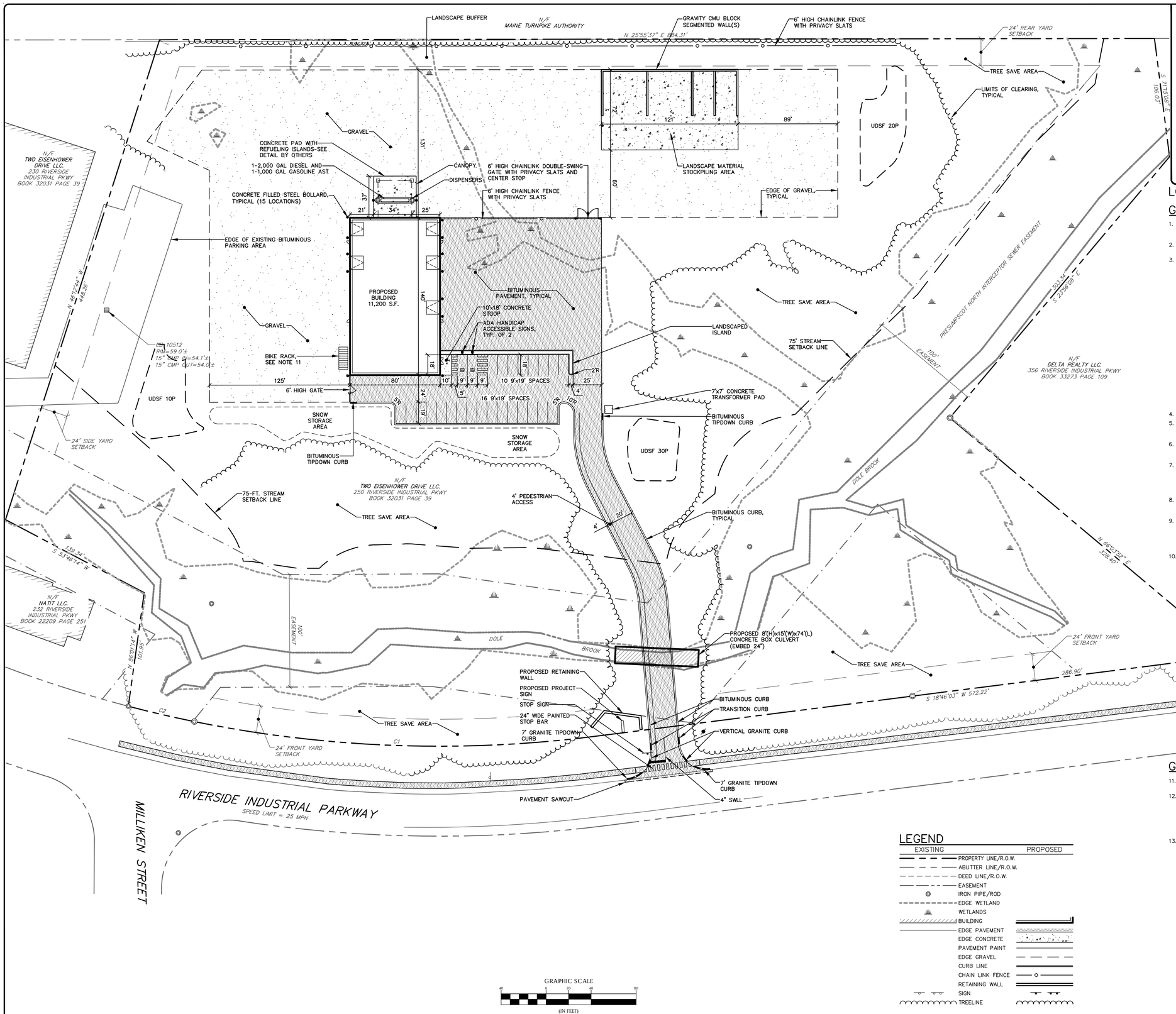
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

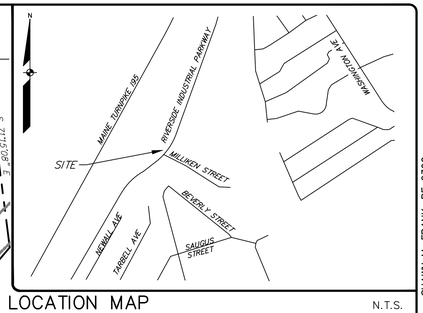
EXISTING CONDITIONS PLAN
OF:
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 50'

SHEET 2 OF 12

16360EC.dwg, TAB: 16360EC





LOCATION MAP

N.T.S.

GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS TWO EISENHOWER DRIVE LLC., BY DEED DATED JANUARY 10, 2015 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 32031, PAGE 39.
2. THE PROPERTY IS SHOWN AS LOT B001 ON THE CITY OF PORTLAND TAX MAP 330A AND IS LOCATED IN THE IM DISTRICT.
3. SPACE AND BULK CRITERIA FOR THE IM DISTRICT ARE AS FOLLOWS:

	REQUIRED	PROVIDED
NET RESIDENTIAL DENSITY:		
MIN. LOT SIZE:	10,000 SQ. FT.	539,151 SQ. FT. (12.38 ACRES)
MIN. STREET FRONTAGE:	60 FT.	989.62 FT.
MIN. FRONT YARD:	24 FT. (1 FT. PER 1FT. HEIGHT OF BUILDING MAX 25 FT.)	325.9 FT.
MIN. SIDE YARD:	24 FT. (1 FT. PER 1FT. HEIGHT OF BUILDING MAX 25 FT.)	209.4 FT.
MIN. REAR YARD:	24 FT. (1 FT. PER 1FT. HEIGHT OF BUILDING MAX 25 FT.)	158.5 FT.
MAX. BUILDING HEIGHT:	75 FT.	24 FT.
MAX. IMPERVIOUS RATIO:	75%	
MIN. SIGHT DISTANCE:	200 FT.	>500 FT. LEFT >425 FT. RIGHT

* SEE ORDINANCE FOR MORE PARTICULAR INFORMATION.

4. TOTAL AREA OF PARCEL IS APPROXIMATELY 10.5 ACRES.
5. NO BOUNDARY SURVEY WAS PERFORMED BY SEBAGO TECHNICS, INC. BOUNDARY INFORMATION SHOWN IS BASED SOLELY UPON INFORMATION FROM PLAN REFERENCE 6A.
6. TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNICS, INC. ON MARCH 20, 2018 AND PARTLY FROM A WORKSHEET PROVIDED BY NORTHEAST CIVIL SOLUTIONS.
7. PLAN REFERENCES:
   A. CONCEPTUAL SITE PLAN FOR COMMERCIAL/INDUSTRIAL DEVELOPMENT FOR RECORD OWNER R.M. DAVIS, INC. C/O ARTHUR DORDUAS" PREPARED BY NORTHEAST CIVIL SOLUTIONS, DATED JULY, 2010.
8. PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON ARE CITY OF PORTLAND DATUM, BASED ON DUAL FREQUENCY GPS OBSERVATIONS.
9. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
10. THE LAND USE CODE DOES NOT SPECIFY REQUIRED OFF STREET PARKING FOR THIS TYPE OF FACILITY. THE APPLICANT IS PROPOSING (45) PARKING SPACES, ONE PER EMPLOYEE AT MAXIMUM SHIFT, PLUS (5) PARKING SPACES FOR VISITORS.

    (26) PAVED PARKING SPACES ARE PROPOSED, WITH (2) ADA ACCESSIBLE SPACES.

    (24) GRAVEL EMPLOYEE PARKING SPACES WILL DOUBLE AS COMPANY VEHICLE PARKING SPACES.

GENERAL NOTES CONTINUED:

11. PLAN DEPICTS (5) DERO DOWNTOWN BIKE RACKS, TO ACCOMMODATE (10) BICYCLE PARKING SPACES.
12. WETLAND INFORMATION DEPICTED HEREON WAS TAKEN FROM PLAN REFERENCE 7A. THE WETLANDS ON THIS SITE WERE REVIEWED AND UPDATED ON JULY 25, 2018 BY GARY M. FULLERTON, CSS OF SEBAGO TECHNICS, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND 2012 NORTHEAST REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. ALL WETLAND FLAGS WERE LOCATED USING A GPS BACKPACK UNIT CAPABLE OF SUBMETER ACCURACY.
13. TOTAL PROPOSED WETLAND IMPACT AREA IS 6,850 SQ. FT.

LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
ABUTTER LINE/R.O.W.	
DEED LINE/R.O.W.	
EASEMENT	
IRON PIPE/ROD	
EDGE WETLAND	
WETLANDS	
BUILDING	
EDGE PAVEMENT	
EDGE CONCRETE	
PAVEMENT PAINT	
EDGE GRAVEL	
CURB LINE	
CHAIN LINK FENCE	
RETAINING WALL	
SIGN	
TREELINE	

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 INCH = 40 FT.

SHAWN M. FRANK, PE 6396

STATE OF MAINE * SHAWN M. FRANK No. 6396 * REGISTERED PROFESSIONAL ENGINEER
12-18-18

DESIGNED	CHECKED
SAH	SMF

F	SMF	12-18-18	REVISE FUEL ISLAND AND RESUBMIT
E	SMF	12-12-18	RESPONSE TO CITY COMMENTS
D	SMF	10-23-18	ADDED 75' STREAM SETBACK TO SITE PLANS
C	SMF	9-21-18	REVISED WETLAND IMPACT AREA
B	SMF	8-27-18	REVISED PER CITY COMMENTS
A	SMF	7-13-18	ISSUED TO CITY
REV.	BY:	DATE:	STATUS

THESE PLANS ARE NOT TO BE USED OR REPRODUCED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE AUTHORIZATION OF SEBAGO TECHNICS, INC. ANY ALTERATIONS, WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC. AUTHORIZED BY

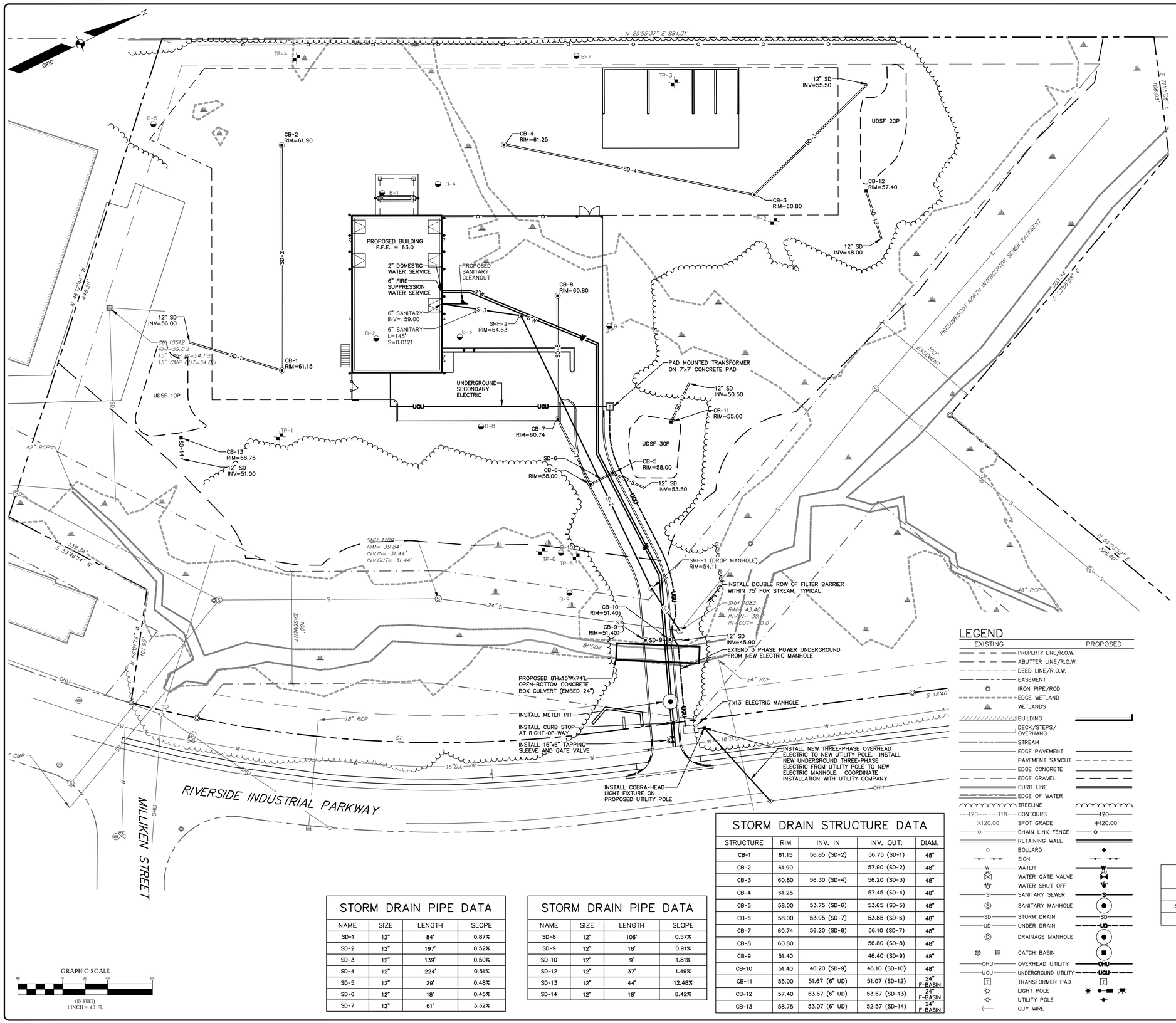
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

SITE PLAN
OF:
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 40'

SHEET 3 OF 12

16360 S.dwg, TAB:S



CONSTRUCTION NOTES

1. ALL WORK SHALL CONFORM TO THE APPLICABLE CODES AND ORDINANCES.

2. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIM OR HERSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIM OR HERSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

3. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND IN THE FIELD.

4. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND OWNER'S REQUIREMENTS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.

5. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.

6. CONTRACTOR SHALL CLEAN AND REMOVE DEBRIS AND SEDIMENT DEPOSITED ON PUBLIC STREETS, SIDEWALKS, ADJACENT AREAS, OR OTHER PUBLIC WAYS DUE TO CONSTRUCTION.

7. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION AND AS DIRECTED BY DESIGN DRAWINGS.

8. SITE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.

9. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENT CONTROL BMPS" PUBLISHED BY THE BUREAU OF LAND AND WATER QUALITY OF THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2003 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.

10. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN HEREON ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY UTILITY COMPANIES. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (811) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.

11. CONTRACTOR SHALL BE AWARE THAT DIG SAFE ONLY NOTIFIES ITS "MEMBER" UTILITIES ABOUT THE DIG. WHEN NOTIFIED, DIG SAFE WILL ADVISE CONTRACTOR OF MEMBER UTILITIES IN THE AREA. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND CONTACTING NON-MEMBER UTILITIES DIRECTLY. NON-MEMBER UTILITIES MAY INCLUDE TOWN OR CITY WATER AND SEWER DISTRICTS AND SMALL LOCAL UTILITIES, AS WELL AS USG PUBLIC WORKS SYSTEMS.

12. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITIES TO OBTAIN AUTHORIZATION PRIOR TO RELOCATION OF ANY EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS. IF A UTILITY CONFLICT ARISES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER, THE MUNICIPALITY AND APPROPRIATE UTILITY COMPANY PRIOR TO PROCEEDING WITH ANY RELOCATION.

13. ALL PAVEMENT MARKINGS AND DIRECTIONAL SIGNAGE SHOWN ON THE PLAN SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.

14. ALL PAVEMENT JOINTS SHALL BE SAWCUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.

15. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.

16. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL REQUIRE A M.D.O.T. PERMIT AS WELL AS PERMITS FROM THE MUNICIPALITY AS APPLICABLE.

17. THE PROPOSED LIMITS OF CLEARING SHOWN HEREON ARE APPROXIMATE BASED UPON THE PROPOSED LIMITS OF SITE GRADING. THE APPLICANT RESERVES THE RIGHT TO PERFORM NORMAL FOREST MANAGEMENT ACTIVITIES OUTSIDE OF THE CLEARING LIMIT AS SHOWN. TREE REMOVAL OUTSIDE OF THE LIMITS OF CLEARING MAY BE NECESSARY TO REMOVE DEAD OR DYING TREES OR TREE LIMBS. THIS REMOVAL IS DUE TO POTENTIAL SAFETY HAZARDS AND TO PROMOTE PROPER FOREST GROWTH.

18. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND AS SPECIFIED ON PLANS.

19. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR THE REMOVAL, REPLACEMENT AND RECTIFICATION OF ALL DAMAGED AND DEFECTIVE MATERIAL AND WORKMANSHIP IN CONNECTION WITH THE CONTRACT WORK. THE CONTRACTOR SHALL REPLACE OR REPAIR AS DIRECTED BY THE OWNER ALL SUCH DAMAGED OR DEFECTIVE MATERIALS WHICH APPEAR WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.

20. ALL WORK PERFORMED BY THE GENERAL CONTRACTOR AND/OR TRADE SUBCONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF LOCAL, STATE OR FEDERAL LAWS, AS WELL AS ANY OTHER GOVERNING REQUIREMENTS, WHETHER OR NOT SPECIFIED ON THE DRAWINGS.

21. WHERE THE TERMS "APPROVED EQUAL", "OTHER APPROVED", "EQUAL TO", "ACCEPTABLE" OR OTHER GENERAL QUALIFYING TERMS ARE USED IN THESE NOTES, IT SHALL BE UNDERSTOOD THAT REFERENCE IS MADE TO THE RULING AND JUDGMENT OF SEBAGO TECHNICS, INC.

22. THE GENERAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION FOR THE WORK UNTIL TURNED OVER TO THE OWNER.

23. THE GENERAL CONTRACTOR SHALL MAINTAIN A CURRENT AND COMPLETE SET OF CONSTRUCTION DRAWINGS ON SITE DURING ALL PHASES OF CONSTRUCTION FOR USE OF ALL TRADES.

24. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.

25. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. ANY MODIFICATION TO SUIT FIELD DIMENSION AND CONDITION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY WORK.

26. BEFORE THE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND MATERIALS, REPAIR OR REPLACE PRIVATE OR PUBLIC PROPERTY WHICH MAY HAVE BEEN DAMAGED OR DESTROYED DURING CONSTRUCTION, CLEAN THE AREAS WITHIN AND ADJACENT TO THE PROJECT WHICH HAVE BEEN OBSTRUCTED BY HIS/HER OPERATIONS, AND LEAVE THE PROJECT AREA NEAT AND PRESENTABLE.

27. ALL SUBSURFACE UTILITY LINES SHOWN HEREON ARE BASED SOLELY ON THE FIELD LOCATION OF VISIBLE STRUCTURES, SMH'S, CB'S, HYDRANTS, ETC.. IN CONJUNCTION WITH DESIGN AND OR AS-BUILT PLANS SUPPLIED TO SEBAGO TECHNICS INC. BY OTHERS. PRIOR TO ANY CONSTRUCTION, EXCAVATION, TEST BORINGS, DRILLING, ETC., DIG SAFE MUST BE NOTIFIED AND A SITE IDENTIFICATION NUMBER ALONG WITH A SAFE TO DIG DATE OBTAINED. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING THE LOCATION, DEPTH AND MATERIAL OF ALL SUBSURFACE UTILITY LINES SHOWN HEREON AND ANY AND ALL OTHERS LOCATED ON SITE WITHIN THE CONSTRUCTION AREA.

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	DEED LINE/R.O.W.	
	EASEMENT	
⊙	IRON PIPE/ROD	
	EDGE WETLAND	
	WETLANDS	
	BUILDING	
	DECK/STEPS/ OVERHANG	
	STREAM	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
120	CONTOURS	120
×120.00	SPOT GRADE	+120.00
	CHAIN LINK FENCE	
	RETAINING WALL	
	BOLLARD	
	SIGN	
W	WATER	W
	WATER GATE VALVE	
	WATER SHUT OFF	
S	SANITARY SEWER	S
Ⓢ	SANITARY MANHOLE	
SD	STORM DRAIN	SD
UD	UNDER DRAIN	UD
Ⓓ	DRAINAGE MANHOLE	
	CATCH BASIN	
OHU	OVERHEAD UTILITY	OHU
UGU	UNDERGROUND UTILITY	UGU
T	TRANSFORMER PAD	T
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-1	12"	84'	0.87%
SD-2	12"	197'	0.52%
SD-3	12"	139'	0.50%
SD-4	12"	224'	0.51%
SD-5	12"	29'	0.48%
SD-6	12"	18'	0.45%
SD-7	12"	61'	3.32%

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-8	12"	106'	0.57%
SD-9	12"	18'	0.91%
SD-10	12"	9'	1.81%
SD-12	12"	37'	1.49%
SD-13	12"	44'	12.48%
SD-14	12"	18'	8.42%

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	61.15	56.85 (SD-2)	56.75 (SD-1)	48"
CB-2	61.90		57.90 (SD-2)	48"
CB-3	60.80	56.30 (SD-4)	56.20 (SD-3)	48"
CB-4	61.25		57.45 (SD-4)	48"
CB-5	58.00	53.75 (SD-6)	53.65 (SD-5)	48"
CB-6	58.00	53.95 (SD-7)	53.85 (SD-6)	48"
CB-7	60.74	56.20 (SD-8)	56.10 (SD-7)	48"
CB-8	60.80		56.80 (SD-8)	48"
CB-9	51.40		46.40 (SD-9)	48"
CB-10	51.40	46.20 (SD-9)	46.10 (SD-10)	48"
CB-11	55.00	51.67 (6" UD)	51.07 (SD-12)	24" F-BASIN
CB-12	57.40	53.67 (6" UD)	53.57 (SD-13)	24" F-BASIN
CB-13	58.75	53.07 (6" UD)	52.57 (SD-14)	24" F-BASIN

SANITARY SEWER STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
SMH-1 (DROP MANHOLE)	54.11	41.80 (S-2)	31.80 (S-1)	48"
SMH-2	64.63	57.57 (S-3)	58.40 (S-2)	48"

SANITARY SEWER PIPE DATA

NAME	SIZE	LENGTH	SLOPE
S-1	6"	43'	3.52%
S-2	6"	266'	6.16%
S-3	6"	70'	2.00%

GRAPHIC SCALE
40 0 20 40 80
(IN FEET)
1 INCH = 40 FT.

SHAWN M. FRANK, PE 6396

STATE OF MAINE · SHAWN M. FRANK · No. 6396 · PROFESSIONAL ENGINEER · 12-18-18

DESIGNED	CHECKED
SAH	SMF

REV.	BY:	DATE:	STATUS
F.	SMF	12-18-18	REVISE FUEL ISLAND AND RESUBMIT
E.	SMF	12-12-18	RESPONSE TO CITY COMMENTS
D.	SMF	10-23-18	ADDED 75' STREAM SETBACK TO SITE PLANS
C.	SMF	9-21-18	REVISED WETLAND IMPACT AREA
B.	SMF	8-27-18	REVISED PER CITY COMMENTS
A.	SMF	7-13-18	ISSUED TO CITY

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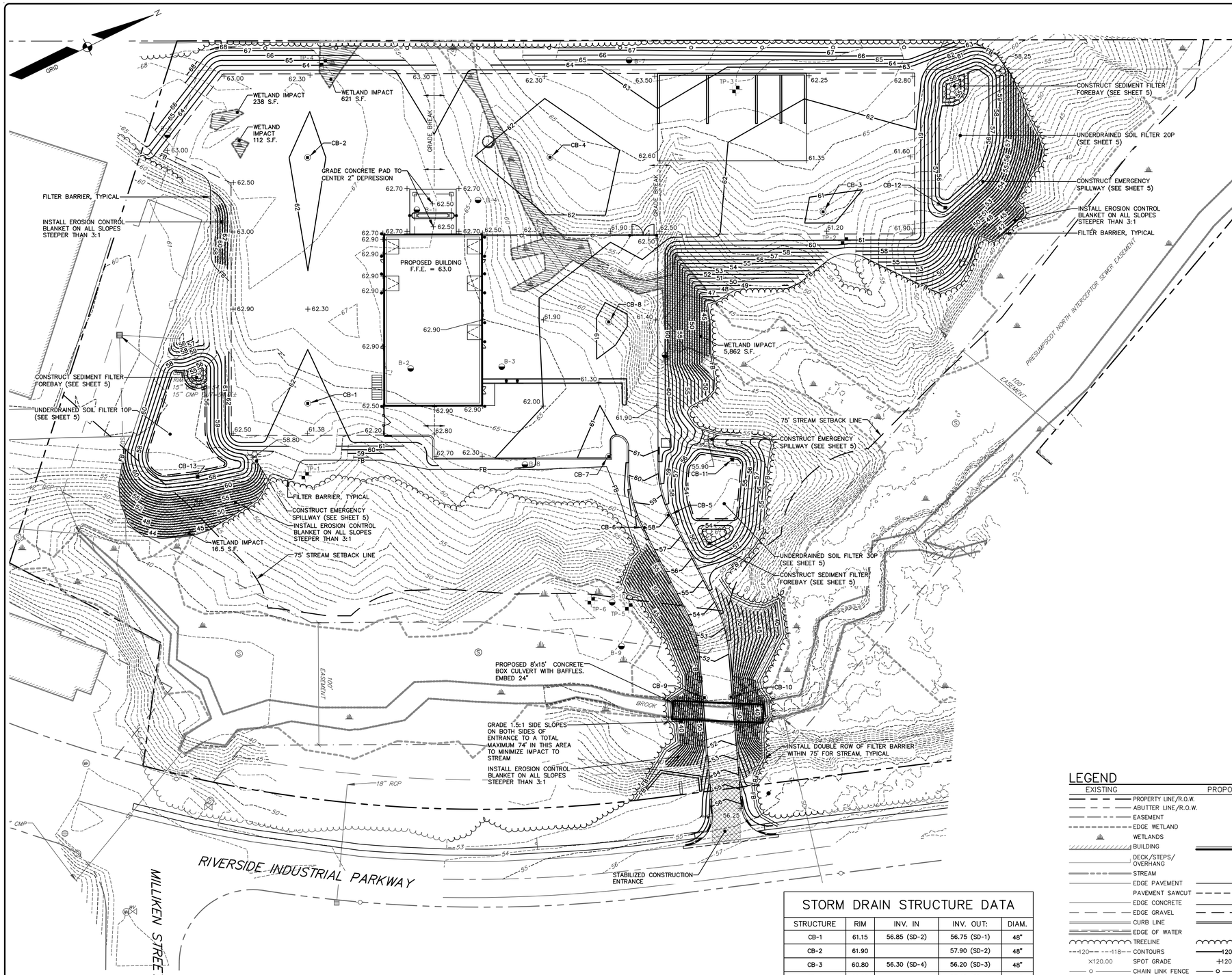
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. (207) 200-2100

UTILITY PLAN
OF:
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 40'

SHEET 4 OF 12

16360 U.dwg, TAB:U



GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
1 INCH = 40 FT.

TOTAL WETLAND IMPACT = 6,849.5 S.F.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
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LEGEND

EXISTING	PROPOSED
PROPERTY LINE/R.O.W.	
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EDGE WETLAND	
WETLANDS	
BUILDING	
DECK/STEPS/ OVERHANG	
STREAM	
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PAVEMENT SAWCUT	
EDGE CONCRETE	
EDGE GRAVEL	
CURB LINE	
EDGE OF WATER	
TREELINE	
120 118 CONTOURS	120
×120.00 SPOT GRADE	+120.00
CHAIN LINK FENCE	
RETAINING WALL	
BOLLARD	
SIGN	
WATER GATE VALVE	
SANITARY MANHOLE	
DRAINAGE MANHOLE	
CATCH BASIN	
UTILITY POLE	
BLANKET	
FILTER BARRIER	FB
RIPRAP	

CONSTRUCTION NOTES

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14. ALL PAVEMENT JOINTS SHALL BE SAWCUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.

15. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.

16. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL REQUIRE A M.D.O.T. PERMIT AS WELL AS PERMITS FROM THE MUNICIPALITY AS APPLICABLE.

17. THE PROPOSED LIMITS OF CLEARING SHOWN HEREON ARE APPROXIMATE BASED UPON THE PROPOSED LIMITS OF SITE GRADING. THE APPLICANT RESERVES THE RIGHT TO PERFORM NORMAL FOREST MANAGEMENT ACTIVITIES OUTSIDE OF THE CLEARING LIMIT AS SHOWN. TREE REMOVAL OUTSIDE OF THE LIMITS OF CLEARING MAY BE NECESSARY TO REMOVE DEAD OR DYING TREES OR TREE LIMBS. THIS REMOVAL IS DUE TO POTENTIAL SAFETY HAZARDS AND TO PROMOTE PROPER FOREST GROWTH.

18. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND AS SPECIFIED ON PLANS.

19. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR THE REMOVAL, REPLACEMENT AND RECTIFICATION OF ALL DAMAGED AND DEFECTIVE MATERIAL AND WORKMANSHIP IN CONNECTION WITH THE CONTRACT WORK. THE CONTRACTOR SHALL REPLACE OR REPAIR AS DIRECTED BY THE OWNER ALL SUCH DAMAGED OR DEFECTIVE MATERIALS WHICH APPEAR WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.

20. ALL WORK PERFORMED BY THE GENERAL CONTRACTOR AND/OR TRADE SUBCONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF LOCAL, STATE OR FEDERAL LAWS, AS WELL AS ANY OTHER GOVERNING REQUIREMENTS, WHETHER OR NOT SPECIFIED ON THE DRAWINGS.

21. WHERE THE TERMS "APPROVED EQUAL", "OTHER APPROVED", "EQUAL TO", "ACCEPTABLE" OR OTHER GENERAL QUALIFYING TERMS ARE USED IN THESE NOTES, IT SHALL BE UNDERSTOOD THAT REFERENCE IS MADE TO THE RULING AND JUDGMENT OF SEBAGO TECHNICS, INC.

22. THE GENERAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION FOR THE WORK UNTIL TURNED OVER TO THE OWNER.

23. THE GENERAL CONTRACTOR SHALL MAINTAIN A CURRENT AND COMPLETE SET OF CONSTRUCTION DRAWINGS ON SITE DURING ALL PHASES OF CONSTRUCTION FOR USE OF ALL TRADES.

24. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.

25. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. ANY MODIFICATION TO SUIT FIELD DIMENSION AND CONDITION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY WORK.

26. BEFORE THE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND MATERIALS, REPAIR OR REPLACE PRIVATE OR PUBLIC PROPERTY WHICH MAY HAVE BEEN DAMAGED OR DESTROYED DURING CONSTRUCTION, CLEAN THE AREAS WITHIN AND ADJACENT TO THE PROJECT WHICH HAVE BEEN OBSTRUCTED BY HIS/HER OPERATIONS, AND LEAVE THE PROJECT AREA NEAT AND PRESENTABLE.

27. ALL SUBSURFACE UTILITY LINES SHOWN HEREON ARE BASED SOLELY ON THE FIELD LOCATION OF VISIBLE STRUCTURES, SMH'S, CB'S, HYDRANTS, ETC.. IN CONJUNCTION WITH DESIGN AND OR AS-BUILT PLANS SUPPLIED TO SEBAGO TECHNICS INC. BY OTHERS. PRIOR TO ANY CONSTRUCTION, EXCAVATION, TEST BORINGS, DRILLING, ETC.. DIG SAFE MUST BE NOTIFIED AND A SITE IDENTIFICATION NUMBER ALONG WITH A SAFE TO DIG DATE OBTAINED. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING THE LOCATION, DEPTH AND MATERIAL OF ALL SUBSURFACE UTILITY LINES SHOWN HEREON AND ANY AND ALL OTHERS LOCATED ON SITE WITHIN THE CONSTRUCTION AREA.

SHAWN M. FRANK, PE 6396

STATE OF MAINE SHAWN M. FRANK No. 6396 PROFESSIONAL ENGINEER 12-18-18

DESIGNED	CHECKED
SAH	SMF

F.	SMF	12-18-18	REVISE FUEL ISLAND AND RESUBMIT
E.	SMF	12-12-18	RESPONSE TO CITY COMMENTS
D.	SMF	10-23-18	ADDED 75' STREAM SETBACK TO SITE PLANS
C.	SMF	9-21-18	REVISED WETLAND IMPACT AREA
B.	SMF	8-27-18	REVISED PER CITY COMMENTS
A.	SMF	7-13-18	ISSUED TO CITY
REV.	BY:	DATE:	STATUS

THESE PLANS SHALL BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

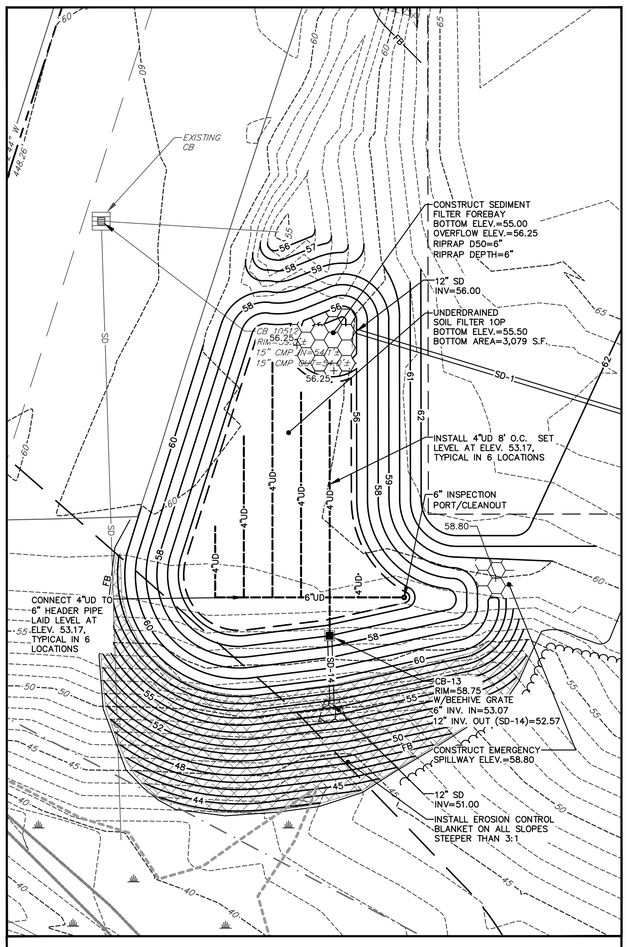
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

GRADING AND EROSION CONTROL PLAN
OF:
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

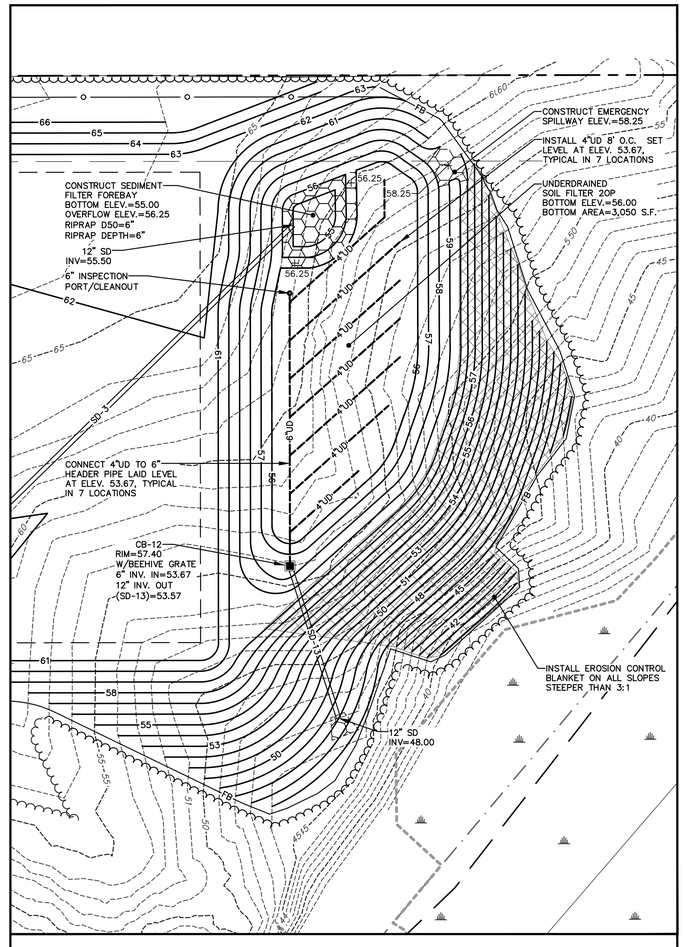
PROJECT NO.	SCALE
16360	1" = 40'

SHEET 5 OF 12

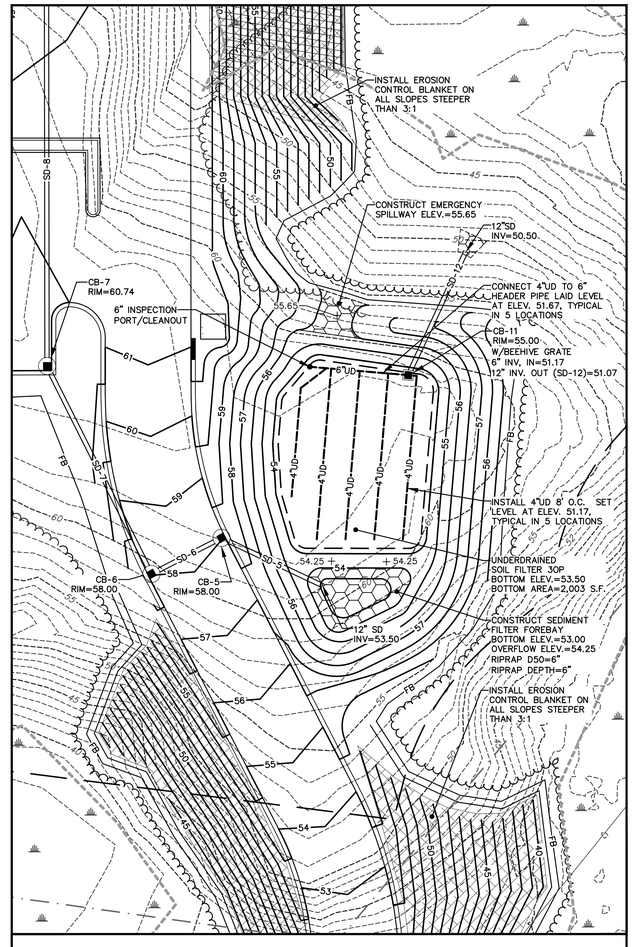
16360 G.dwg, TAB: G



GRASSED UNDERDRAINED SOIL FILTER 1OP
SCALE: 1"=20'



GRASSED UNDERDRAINED SOIL FILTER 2OP
SCALE: 1"=20'



GRASSED UNDERDRAINED SOIL FILTER 3OP
SCALE: 1"=20'

STORM DRAIN STRUCTURE DATA				
STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-13	58.75	53.07 (6" UD)	52.57 (SD-14)	24" F-BASIN

STORM DRAIN PIPE DATA			
NAME	SIZE	LENGTH	SLOPE
SD-1	12"	84'	0.87%
SD-14	12"	18'	8.42%

STORM DRAIN STRUCTURE DATA				
STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-12	57.40	53.67 (6" UD)	53.57 (SD-13)	24" F-BASIN

STORM DRAIN PIPE DATA			
NAME	SIZE	LENGTH	SLOPE
SD-3	12"	139'	0.50%
SD-13	12"	44'	12.48%

STORM DRAIN STRUCTURE DATA				
STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-5	58.00	53.75 (SD-6)	53.65 (SD-5)	48"
CB-6	58.00	53.95 (SD-7)	53.85 (SD-6)	48"
CB-7	60.74	56.20 (SD-8)	56.10 (SD-7)	48"
CB-11	55.00	51.67 (6" UD)	51.07 (SD-12)	24" F-BASIN

STORM DRAIN PIPE DATA			
NAME	SIZE	LENGTH	SLOPE
SD-5	12"	29'	0.48%
SD-6	12"	18'	0.45%
SD-7	12"	61'	3.32%
SD-8	12"	106'	0.57%
SD-12	12"	37'	1.49%

GENERAL POND CONSTRUCTION NOTES:

1. INSTALL HAY BALE BARRIER AROUND ALL CATCH BASINS NOT IN PAVEMENT.
2. SEE DETAIL SHEETS FOR EROSION CONTROL NOTES.
3. SOIL STOCKPILES SHALL NOT BE LOCATED WITHIN 100 FEET OF ANY NATURAL RESOURCES. STOCKPILES SHALL BE CONTAINED WITH A DOUBLE BOUNDARY OF FILTRATION BARRIER. SEE EROSION CONTROL NOTES.
4. PIPE MATERIALS:
   a) STORM DRAIN: SMOOTH WALL CORRUGATED HDPE
   b) UNDER DRAIN: 6" PERFORATED HDPE
   c) SANITARY SEWER: SDR-35 HDPE
5. SEE DETAIL SHEETS FOR ADDITIONAL DETAILS.

GENERAL NOTES:

1. BORINGS SHOWN ARE REFERENCED FROM A REPORT, 14-0209 DATED MAY 7, 2014, GEOTECHNICAL ENGINEERING SERVICES, PROPOSED CONDOMINIUM DEVELOPMENT PHASE II (WOODS EDGE) AND PHASE III (RIDGEFIELD), FOR HILL ROAD, GORHAM, MAINE. REPORT WAS PREPARED BY S.W. COLE ENGINEERING SERVICES, INC. BY MICHAEL ST. PIERRE, GEOTECHNICAL ENGINEER, MAINE PE #12519. THE REPORT ALSO INCLUDES SUBSURFACE DATA AND NARRATIVE OF THE FINDINGS AND RECOMMENDATIONS.

LEGEND

EXISTING		PROPOSED
120 118	CONTOURS	120
X120.00	SPOT GRADE	+120.00
SD	STORM DRAIN	SD
UD	UNDER DRAIN	UD
S	DRAINAGE MANHOLE	
	CATCH BASIN	
	EDGE WETLAND	
	WETLANDS	

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 INCH = 20 FT.

SHAWN M. FRANK, PE 6396

STATE OF MAINE
SHAWN M. FRANK
No. 6396
REGISTERED PROFESSIONAL ENGINEER
12-18-18

DESIGNED	CHECKED
SAH	SMF

REV.	BY:	DATE:	STATUS
F	SMF	12-18-18	REVISE FUEL ISLAND AND RESUBMIT
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THIS PLAN SHALL BE USED FOR CONSTRUCTION PURPOSES ONLY IF SIGNED AND DATED BY THE ENGINEER. ANY ALTERATIONS, ERASURES OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

POND CONSTRUCTION PLANS
OF:
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 20'

SHEET 6 OF 12

16360 P.dwg, TAB: POND

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADIENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADIENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.

PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROWS. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

DURING CONSTRUCTION

1. INSPECTION AND CORRECTIVE ACTION:
INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.

2. MAINTENANCE:
IF BEST MANAGEMENT PRACTICES (BMPS) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPS OR SIGNIFICANT REPAIR OF BMPS ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.

3. DOCUMENTATION:
KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPS THAT NEED MAINTENANCE, BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPS, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN.

THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

POST-CONSTRUCTION

1. PLAN:
CARRY OUT AN APPROVED INSPECTION AND MAINTENANCE PLAN THAT IS CONSISTENT WITH THE MINIMUM REQUIREMENTS OF THIS SECTION. THE PLAN MUST ADDRESS INSPECTION AND MAINTENANCE OF THE PROJECT'S PERMANENT EROSION CONTROL MEASURES AND STORMWATER MANAGEMENT SYSTEM. THIS PLAN MAY BE COMBINED WITH THE PLAN LISTED IN SECTION 2(A) OF THIS APPENDIX. SEE SECTION 7(C)(2) FOR SUBMISSION REQUIREMENTS.

2. INSPECTION AND MAINTENANCE:
ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS. THE FOLLOWING AREAS, FACILITIES, AND LOCATIONS MUST BE INSPECTED AND IDENTIFIED DEFICIENCIES MUST BE CORRECTED: AREAS, FACILITIES, AND MEASURES OTHER THAN THOSE LISTED BELOW MAY ALSO REQUIRE INSPECTION ON A SPECIFIC SITE. INSPECTION OR MAINTENANCE TASKS OTHER THAN THOSE DISCUSSED BELOW MUST BE INCLUDED IN THE MAINTENANCE PLAN DEVELOPED FOR A SPECIFIC SITE.

3. REGULAR MAINTENANCE:
CLEAR ACCUMULATIONS OF WINTER SAND IN PARKING LOTS AND ALONG ROADWAYS AT LEAST ONCE A YEAR, PREFERABLY IN THE SPRING. ACCUMULATIONS ON PAVEMENT MAY BE REMOVED BY PAVEMENT SWEEPING. ACCUMULATIONS OF SAND ALONG ROAD SHOULDERS MAY BE REMOVED BY GRADING EXCESS SAND TO THE PAVEMENT EDGE AND REMOVING IT MANUALLY OR BY A FRONT-END LOADER. GRADING OF GRAVEL ROADS, OR GRADING OF THE GRAVEL SHOULDERS OF GRAVEL OR PAVED ROADS, MUST BE ROUTINELY PERFORMED TO ENSURE THAT STORMWATER DRAINS IMMEDIATELY OFF THE ROAD SURFACE TO ADJACENT BUFFER AREAS OR STABLE DITCHES, AND IS NOT IMPEDED BY ACCUMULATIONS OF GRADED MATERIAL ON THE ROAD SHOULDER OR BY EXCAVATION OF FALSE DITCHES IN THE SHOULDER. IF WATER BARS OR OPEN-TOP CULVERTS ARE USED TO DIVERT RUNOFF FROM ROAD SURFACES, CLEAN-OUT ANY SEDIMENTS WITHIN OR AT THE OUTLET OF THESE STRUCTURES TO RESTORE THEIR FUNCTION.

4. DOCUMENTATION:
KEEP A LOG (REPORT) SUMMARIZING INSPECTIONS, MAINTENANCE, AND ANY CORRECTIVE ACTIONS TAKEN. THE LOG MUST INCLUDE THE DATE ON WHICH EACH INSPECTION OR MAINTENANCE TASK WAS PERFORMED, A DESCRIPTION OF THE INSPECTION FINDINGS OR MAINTENANCE COMPLETED, AND THE NAME OF THE INSPECTOR OR MAINTENANCE PERSONNEL PERFORMING THE TASK. IF A MAINTENANCE TASK REQUIRES THE CLEAN-OUT OF ANY SEDIMENTS OR DEBRIS, INDICATE WHERE THE SEDIMENT AND DEBRIS WAS DISPOSED AFTER REMOVAL. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY PROVIDED TO THE DEPARTMENT UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST FIVE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

EROSION CONTROL APPLICATIONS & MEASURES

THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED WITHIN THE CURRENT MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION CHAPTER 500 RULES, THE DEPARTMENTS BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET. EROSION CONTROL MEASURES MUST BE IN PLACE BEFORE THE ACTIVITY BEGINS. MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED. ADEQUATE AND TIMELY TEMPORARY AND PERMANENT STABILIZATION MEASURES MUST BE TAKEN.

1. POLLUTION PREVENTION:
WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 48 HOURS.

2. TEMPORARY MULCHING:
ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 7 DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 15%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
TYPES OF MULCH:
HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).
EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.
EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

3. SOIL STOCKPILES:
STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

4. NATURAL RESOURCES PROTECTION:
ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE STABILIZED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1. OF THIS SECTION) OR OTHER NON-ERODIBLE COVER WITHIN 48 HOURS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4. OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA. PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE. IF DISTURBANCE TAKES PLACE LESS THAN 30 FEET FROM A PROTECTED RESOURCE AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TO THE RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED.

5. SEDIMENT BARRIERS:
PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

EROSION CONTROL MIX: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

6. TEMPORARY CHECK DAMS:
SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 85%-90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: WE DO NOT RECOMMEND THE USE OF HAY BALES AS CHECK DAMS.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

1. STORMDRAIN INLET PROTECTION:
INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLETOR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. STABILIZED CONSTRUCTION EXIT:
PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.

3. DUST CONTROL:
DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE.

4. TEMPORARY VEGETATION:
TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

5. PERMANENT VEGETATION:
REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:
A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:
A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDEP SEED MIX 2 IS DISPLAYED)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
REDTOP	0.05 LBS/1,000 S.F. (2 LBS/ACRE)
TALL FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
TOTAL:	0.97 LBS/1,000 S.F. (42 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER.

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:

FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS AND DOWN THE SLOPE TO ENSURE THAT NO FLOW PASSES UNDER THE SOD. SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION:

WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 8% (12.5H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SLOPE WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1,000 SQUARE FEET AND APPLY EROSION CONTROL MATS OVER THE MULCHED SLOPE. THE CONTRACTOR WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.

B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY NOVEMBER 15. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).

C. STABILIZE THE SLOPE WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF EROSION CONTROL MIX ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. DO NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 1H:1V OR HAVING GROUNDWATER SEEPS ON SLOPE FACE.

D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 8%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.

B. STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. PROPER INSTALLATION INCLUDES THE APPLICANT PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.

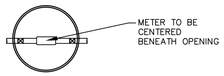
C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

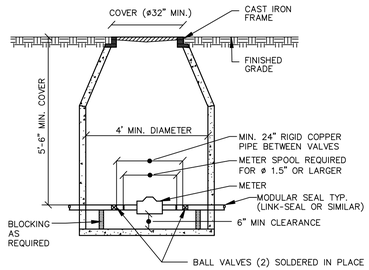
D. STABILIZE THE SOIL WITH EROSION CONTROL MIX -- THE CONTRACTOR WILL PLACE A MINIMUM TWO-INCH LAYER OF EROSION CONTROL MIX ON THE SOIL BY NOVEMBER 15. PRIOR TO PLACING THE EROSION CONTROL MIX, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE.

CONSTRUCTION SCHEDULE

SITE IMPROVEMENTS WILL MOST LIKELY BEGIN IN ____, DEPENDING UPON FINAL PROJECT APPROVAL. THE FOLLOWING SCHEDULE IS ANTICIPATED:

1.	ESTIMATED CONSTRUCTION TIME:	-- MONTHS
2.	EROSION CONTROL MEASURES PLACED	WEEK 1 - WEEK 2
3.	SITE CLEARING AND GRUBBING	WEEK 2 - WEEK 5
4.	CONSTRUCTION OF ROAD SUBBASE FOR ACCESS	WEEK 5 - WEEK 13
5.	STORMWATER MANAGEMENT AREA CONSTRUCTION	WEEK 7 - WEEK 9
6.	UTILITY IMPROVEMENTS AND ROADWAY CONSTRUCTION	WEEK 7 - WEEK 24
7.	MULCH

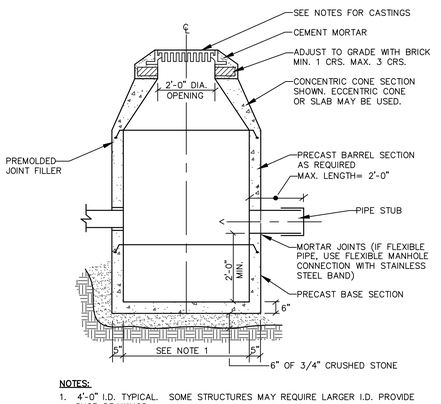




METER PIT AND COVER NOTES:

1. THE METER PIT SHALL BE SUPPLIED AND INSTALLED BY THE CUSTOMER AND SHALL BE LOCATED ON PRIVATE PROPERTY BETWEEN 10'-0" AND 20'-0" FROM THE PROPERTY LINE.
2. THE METER PIT SHALL BE MADE OF PRECAST CONCRETE OF SUFFICIENT SIZE TO PROVIDE 5'-" MINIMUM GROUND COVER FROM FINISHED GRADE TO THE TOP OF THE SERVICE PIPE. ANY SEAMS BETWEEN CONCRETE SECTIONS SHALL BE SEALED WITH MASTIC JOINT. ALL OPENINGS IN THE CONCRETE FOR SERVICE PIPING SHALL BE SEALED WITH A MODULAR SEAL. (LINK-SEAL OF SIMILAR)
3. THE INTERIOR OF THE METER PIT SHALL BE A MINIMUM OF 4'-0" IN DIAMETER. AND THE METER PIT OPENING SHALL BE A MINIMUM OF 30" IN DIAMETER WITH A CAST IRON FRAME. THE METER PIT COVER SHALL BE CAST IRON 32" MINIMUM IN DIAMETER, AND BE WITHER PERMANENTLY LABELED "WATER" OR HAVE NO LABEL ANY STEEL PLATE MATERIAL SHALL BE COATED WITH A RUST INHIBITOR PAINT.
4. WALL-MOUNTED LADDER RUNGS SHOULD NOT BE INSTALLED WITHIN METER PIT.
5. ALL PIPING INSIDE AND EXTENDING THROUGH THE METER PIT SHALL BE MADE OF COPPER, WITH A MINIMUM OF 6" CLEARANCE FROM THE METER PIT FLOOR. BLOCKING SHALL BE INSTALLED AS REQUIRED TO SUPPORT THE PIPE.
6. CUSTOMER SHALL ENSURE THE METER PIT AND COVER ARE PROPERTY RATED FOR TRAFFIC FLOW IF APPLICABLE.
7. ONLY PORTLAND WATER DISTRICT PERSONNEL ARE AUTHORIZED TO INSTALL WATER METERS. PORTLAND WATER DISTRICT PERSONNEL WILL BE ADDITIONALLY AUTHORIZED TO OPERATE METER VALVES AS NEEDED FOR INSTALLATION AND MAINTENANCE.
8. PORTLAND WATER DISTRICT WILL SUPPLY THE WATER METER AND NECESSARY FITTINGS FOR INSTALLATION. IF REQUIRED, A FLANGED METER SPOOL WILL BE AVAILABLE FOR CUSTOMER PICKUP AT DOUGLASS STREET CUSTOMER SERVICE AND MUST BE INSTALLED BY CUSTOMER PRIOR TO METER SET. ALL OTHER MATERIALS INCLUDING VALVES, SHALL BE SUPPLIED AND INSTALLED BY THE CUSTOMER.
9. CUSTOMER WILL INSTALL TWO (2) BALL VALVES 24" APART FOR METER INSTALLATION ALLOWING FOR THE WATER METER TO BE CENTERED UNDER THE METER PIT OPENING, BALL VALVES SHALL BE SOLDERED IN PLACE.
10. FOR A SERVICE PIPE WITH A DIAMETER OF 1" OR LESS, CUSTOMER WILL INSTALL RIGID COPPER PIPE (24" MINIMUM) BETWEEN THE BALL VALVES.
11. FOR PIPING WITH A DIAMETER OF 1-1/2" OR LARGER, THE CUSTOMER WILL OBTAIN A FLANGED METER SPOOL PIECE FROM THE PORTLAND WATER DISTRICT. THE CUSTOMER IS RESPONSIBLE FOR ENSURING THAT THE SPOOL PIECE IS INSTALLED PRIOR TO METER INSTALLATION.
12. THE METER PIT MAY HOUSE UP TO TWO 5/8", 3/4" OR 1" METERS. INSTALLATION OF MULTIPLE METERS IN A METER PUT MUST RECEIVE PRIOR APPROVAL FROM THE PORTLAND WATER DISTRICT.

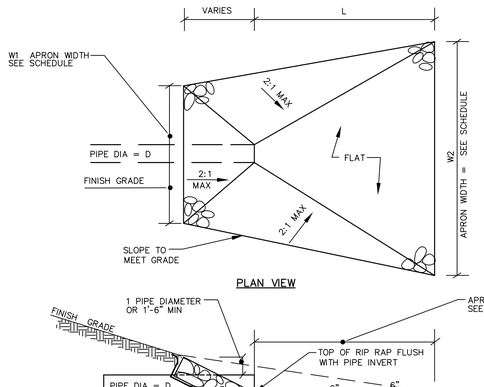
TYPICAL METER PIT (2" METERS)
NOT TO SCALE



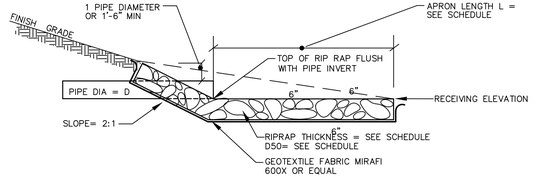
NOTES:

1. 4'-0" I.D. TYPICAL. SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. CATCH BASIN FRAME AND GRATE TO BE NEENAH FOUNDRY R-2554, OR APPROVED EQUAL.

TYPICAL CATCH BASIN
NOT TO SCALE



PLAN VIEW



SECTION VIEW

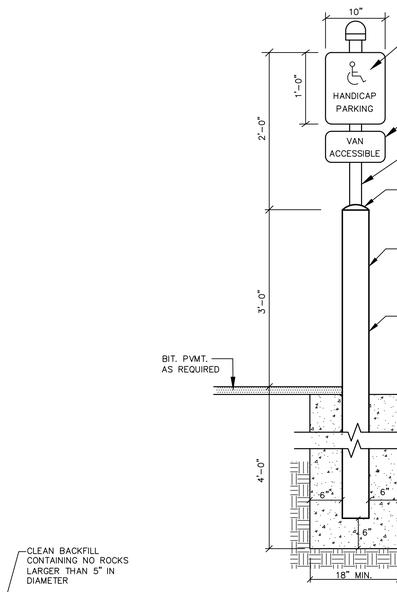
NOTES

1. RIPRAP TO BE PROCESSED ANGULAR ROCK
2. RIPRAP GRADIATION SHALL BE A WELL GRADED MIX FROM ABOUT 1.5 TIMES D SIZE TO 25 PERCENT OF THE D SIZE
3. THE RIPRAP STONES SHALL BE CAREFULLY PLACED FROM THE TOE OF THE SLOPE UPWARD
4. STONES SHALL BE LOWERED TO THE SLOPE AND NOT BE ALLOWED TO DROP MORE THAN 12" ONTO THE GEOTEXTILE
5. THE FINISHED SURFACE SHALL BE A RELATIVELY SMOOTH, UNIFORMLY SLOPED SURFACE

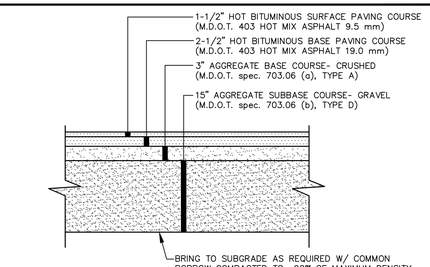
TYPICAL RIPRAP APRON SCHEDULE

CULVERT DIAMETER - D (IN.)	APRON LENGTH - L (FT.)	WIDTH -W1 (FT)	WIDTH -W2 (FT)	RIPRAP D50 (IN.)	RIPRAP THICKNESS (IN.)
12	8	3	9	6	14
15	10	4	12	6	14
18	13	5	15	7	16
24	18	6	20	8	18
36	29	9	32	11	25
42	33	11	37	12	27
48	39	12	43	16	36

RIPRAP APRON
NOT TO SCALE



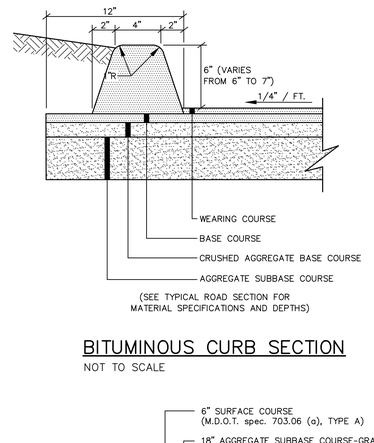
HANDICAP SIGNS IN METAL BOLLARD
NOT TO SCALE



NOTES:

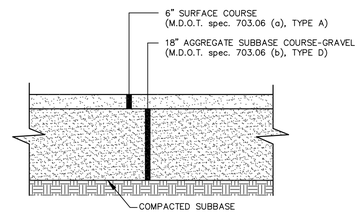
1. COMPACT GRAVEL SUBBASE, BASE COURSE TO 92% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.
3. CONTRACTOR MAY REPLACE BITUMINOUS PAVING SECTION WITH TWO (2) 1-1/2" LIFTS OF 12.5mm SUPERPAVE MIX. SUBMIT PAVEMENT MIX DESIGN PRIOR TO CONSTRUCTION.

TYP. PAVED PARKING LOT SECTION
NOT TO SCALE



(SEE TYPICAL ROAD SECTION FOR
MATERIAL SPECIFICATIONS AND DEPTHS)

BITUMINOUS CURB SECTION
NOT TO SCALE



TYP. GRAVEL PARKING AREA
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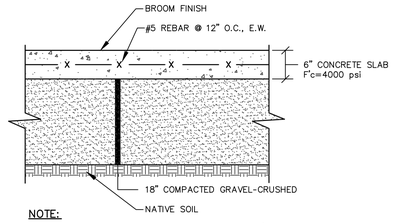
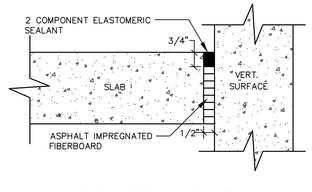


NOTE:

1. PROVIDE CONTRACTION CONTROL JOINTS EVERY 6' IN EACH DIRECTION

TYPICAL CONCRETE SLAB
NOT TO SCALE



ISOLATION JOINT
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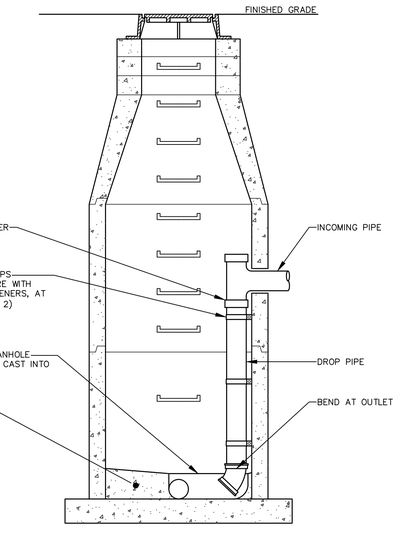
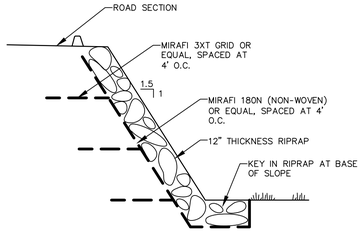
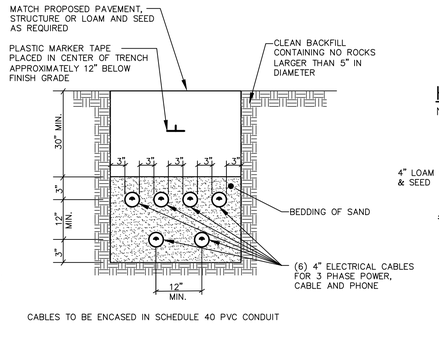


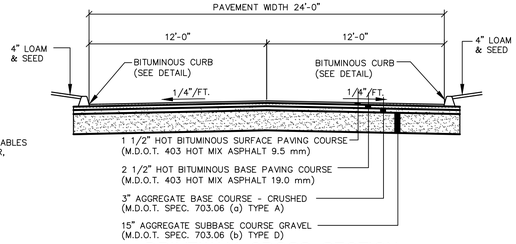
DROP SEWER MANHOLE
NOT TO SCALE



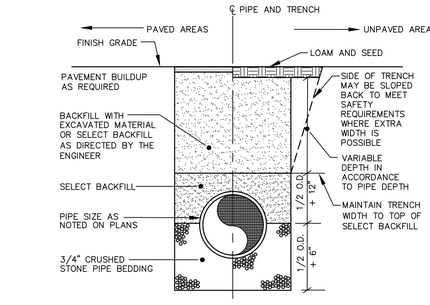
SIDE SLOPE RIPRAP
NOT TO SCALE



TYPICAL UNDERGROUND ELECTRICAL DUCT BANK
NOT TO SCALE



DRIVEWAY CROSS-SECTION
NOT TO SCALE



TYPICAL TRENCH SECTION
NOT TO SCALE

SHAWN M. FRANK, PE 6396
STATE OF MAINE * SHAWN M. FRANK * No. 6396 * REGISTERED PROFESSIONAL ENGINEER
12-18-18

DESIGNED	CHECKED
SAH	SMF

REV.	BY:	DATE:	STATUS:
F.	SMF	12-18-18	REVISE FUEL ISLAND AND RESUBMIT
E.	SMF	12-12-18	RESPONSE TO CITY COMMENTS
D.	SMF	10-23-18	ADDED 75' STREAM SETBACK TO SITE PLANS
C.	SMF	9-21-18	REVISED WETLAND IMPACT AREA
B.	SMF	8-27-18	REVISED PER CITY COMMENTS
A.	SMF	7-13-18	ISSUED TO CITY

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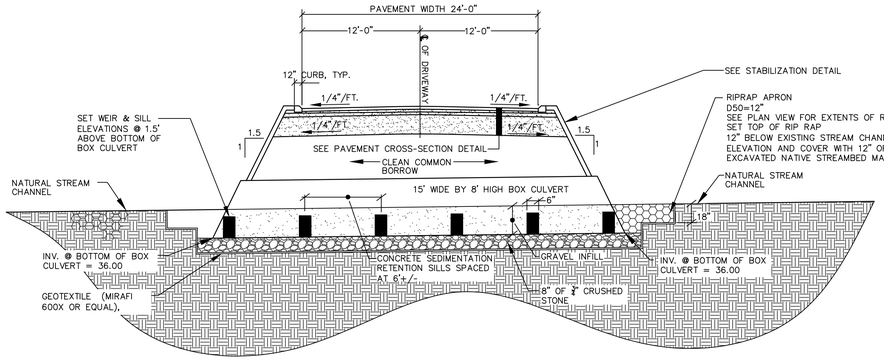
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207.200.2100

DETAILS
OF:
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	N.T.S.

SHEET 8 OF 12

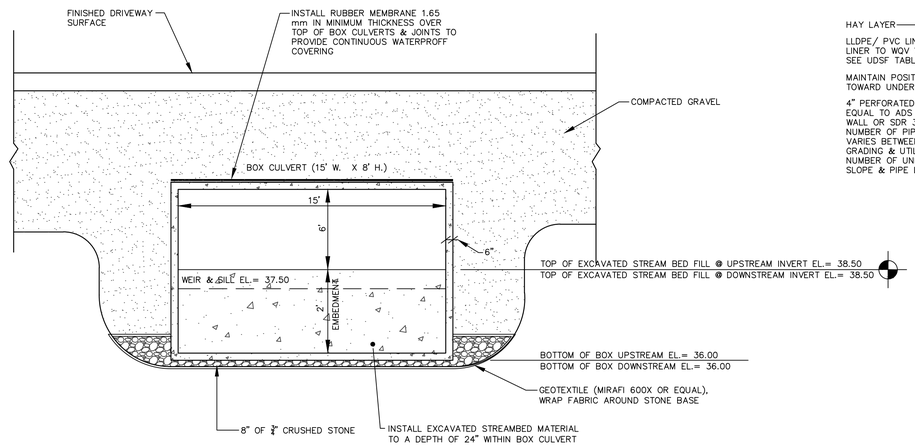
16360 D.dwg, TAB:D2



STREAM CROSSING-SECTION A-A

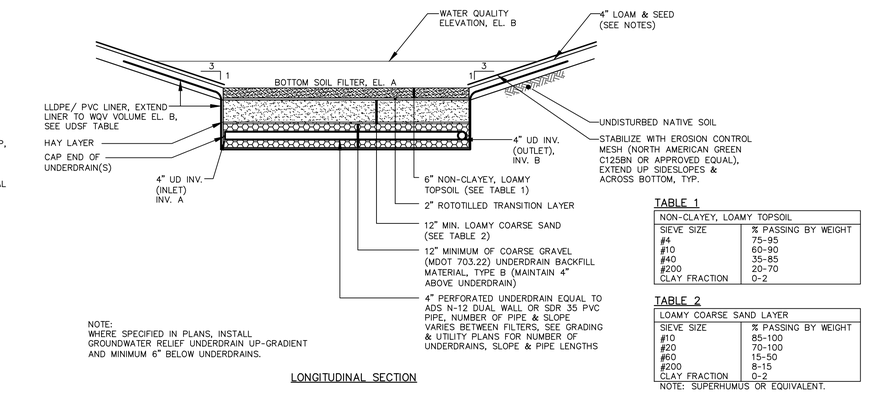
NOT TO SCALE

NOTE:
EXCAVATE NATURAL STREAMBED MATERIAL FOR PLACEMENT OF BOX AND REUSE WITHIN BOX CULVERT AND TOP OF RIPRAP INLET AND OUTLET.



STREAM CROSSING-SECTION B-B

NOT TO SCALE



NOTE:
WHERE SPECIFIED IN PLANS, INSTALL GROUNDWATER RELIEF UNDERDRAIN UP-GRADIENT AND MINIMUM 6" BELOW UNDERDRAINS.

LONGITUDINAL SECTION

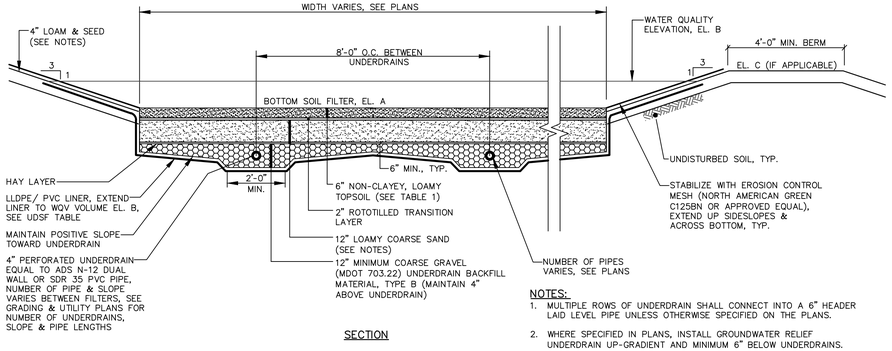
TABLE 1

NON-CLAYEY, LOAMY TOPSOIL	
SIEVE SIZE	% PASSING BY WEIGHT
#4	75-95
#10	60-90
#40	35-85
#200	20-70
CLAY FRACTION	0-2

TABLE 2

LOAMY COARSE SAND LAYER	
SIEVE SIZE	% PASSING BY WEIGHT
#10	85-100
#20	70-100
#60	15-50
#200	8-15
CLAY FRACTION	0-2

NOTE: SUPERHUMUS OR EQUIVALENT.



SECTION

NOTES:
1. MULTIPLE ROWS OF UNDERDRAIN SHALL CONNECT INTO A 6" HEADER LAID LEVEL PIPE UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2. WHERE SPECIFIED IN PLANS, INSTALL GROUNDWATER RELIEF UNDERDRAIN UP-GRADIENT AND MINIMUM 6" BELOW UNDERDRAINS.

UNDERDRAINED SOIL FILTER DETAIL

NOT TO SCALE

UNDERDRAINED SOIL FILTER CONSTRUCTION OVERSIGHT NOTES:

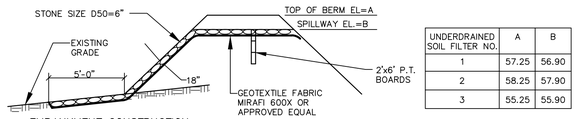
THE APPLICANT WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE UNDERDRAIN. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE UNDERDRAIN'S CONSTRUCTION PLAN FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, AND THE ITEMS INSPECTED ON EACH VISIT, AND INCLUDE ANY TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE.

1. CONSTRUCTION SEQUENCE: THE UNDERDRAIN AND VEGETATION MUST NOT BE INSTALLEDUNTIL THE AREA THAT DRAINS TO THE UNDERDRAIN HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
2. COMPACTION OF UNDERDRAIN: UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR. THE BED SHOULD BE INSTALLED IN AT LEAST 2 LIFTS OF 9 INCHES TO PREVENT POCKETS OF LOOSE MEDIA.
3. CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:
   A. FOR FIRST UNDERDRAIN CONSTRUCTED, AFTER UNDERDRAIN PIPE IS INSTALLED AT GRADE AND BUT NOT BACKFILLED. AFTER THE UNDERDRAIN PIPE IS COMPLETELY BACKFILLED AND BEFORE PLACEMENT OF LOAMY COARSE SAND LAYER.
   B. AFTER THE LOAMY COARSE SAND LAYER AND SOD/ LOAM HAS BEEN INSTALLED.
   C. AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
   D. ALL MATERIAL USED FOR THE CONSTRUCTION OF THE UNDERDRAIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY.

TESTING AND SUBMITTALS
1. THE UNDERDRAIN SHALL CONSIST OF THE TOP THREE LAYERS IDENTIFIED AS LOAMY TOPSOIL, 2" TRANSITION AND 12" LOAMY COARSE SAND. THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE FOR EACH COMPONENT OF THE UNDERDRAIN AND SUBMIT GRADATIONS FOR THE UNDERDRAIN MATERIALS TO THE ENGINEER FOR APPROVAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.

UNDERDRAINED SOIL FILTER MATERIAL NOTES:

1. ONSITE LOAM SHALL BE SCREENED FOR STONES LARGER THAN 1 INCH AND BE TESTED TO VERIFY THERE IS LESS THAN 2% CLAY CONTENT AND 5-8% ORGANIC MATTER. IF ONSITE LOAM DOES NOT MEET REQUIREMENTS, THEN LOAM FROM OFFSITE SHALL BE A NON-CLAYEY, LOAMY TOPSOIL SUCH AS A USDA SANDY LOAM TOPSOIL WITH 5-8% HUMIFIED ORGANIC MATTER AND 3-10% CLAY CONTENT.
2. 2" TRANSITION LAYER OF THE LOAM/SOD LAYER SHALL BE ROTOTILLED INTO THE LOAMY COARSE SAND LAYER BELOW.
3. THE LOAMY COARSE SAND LAYER SHALL BE TESTED IN ACCORDANCE WITH THE TESTING AND SUBMITTALS NOTES ABOVE.
4. A LAYER OF HAY SHALL BE PLACED BETWEEN 12" LOAMY COARSE LAYER AND UNDERDRAIN STONE BEDDING TO PREVENT SUBSIDENCE OR PLUGGING OF THE SAND/GRAVEL/STONE LAYER AND/OR PIPE.
5. UNDERDRAIN STONE BEDDING MATERIAL MUST CONFORM TO THE MDOT SPECIFICATION 703.22 UNDERDRAIN TYPE B FOR UNDERDRAIN BACKFILL MATERIAL. THE BEDDING MATERIAL MUST HAVE NO MORE THAN 5% PASSING THE 200 SIEVE.
6. MATERIAL LAYERS ABOVE THE UNDERDRAIN BACKFILL LAYER SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS CAN BE MIXED WITHIN THE FILTER. DURING CONSTRUCTION, CARE SHOULD BE TAKEN TO AVOID COMPACTION OF BOTH THE GRAVEL AND SOIL FILTER.
7. OVER COMPACTION OF UNDERDRAIN MATERIAL SHALL BE AVOIDED. IF OVER COMPACTION OCCURS, ROTOTILL AGAIN PRIOR TO SEEDING OR SODDING.

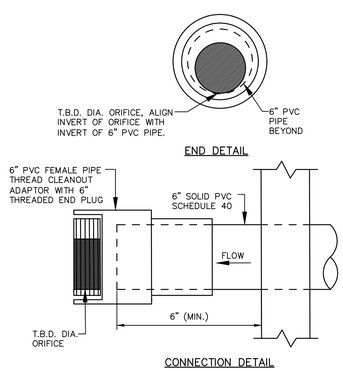


EMBANKMENT CONSTRUCTION
1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION.
2. PLACE BORROW MATERIAL IN 12" LIFTS COMPACTED TO 95% OF MAXIMUM DRY DENSITY.
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

UNDERDRAINED SOIL FILTER NO.	A	B
1	57.25	56.90
2	58.25	57.90
3	55.25	55.90

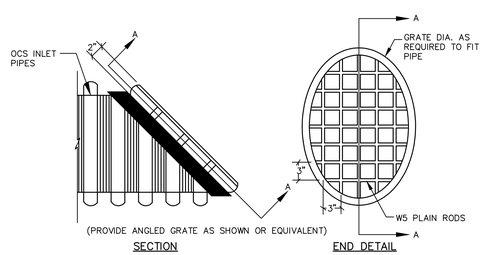
SPILLWAY SECTION

NOT TO SCALE



FLANGE ADAPTOR DETAIL

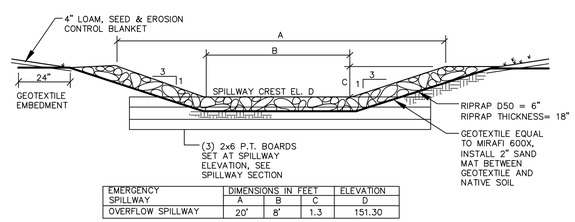
NOT TO SCALE



NOTES:
1. RODS CONFORM TO SECTION 709.1
2. 3/8" GRADE 304 STAINLESS STEEL BOLT AND NUT (4 EA.)
3. GRATE AND HARDWARE SHALL BE CONSTRUCTED OF ALUMINUM OR STAINLESS STEEL.
4. ALTERNATIVE TO SCREEN: AGRI DRAIN AGB12 OR APPROVED EQUAL.

ANIMAL SCREEN DETAIL

NOT TO SCALE



EMERGENCY SPILLWAY	DIMENSIONS IN FEET			ELEVATION
	A	B	C	D
OVERFLOW SPILLWAY	20'	8'	1.3	151.30

EMERGENCY/ FOREBAY SPILLWAY CROSS-SECTION

NOT TO SCALE

SHAWN M. FRANK, PE 6396

STATE OF MAINE SHAWN M. FRANK No. 6396 REGISTERED PROFESSIONAL ENGINEER 12-18-18

REV.	BY:	DATE:	STATUS
A	SMF	7-13-18	ISSUED TO CITY
B	SMF	8-27-18	REVISED PER CITY COMMENTS
C	SMF	9-21-18	REVISED WETLAND IMPACT AREA
D	SMF	10-23-18	ADDED 75' STREAM SETBACK TO SITE PLANS
E	SMF	12-12-18	RESPONSE TO CITY COMMENTS
F	SMF	12-18-18	REVISE FUEL ISLAND AND RESUBMIT

DESIGNED: SAH | CHECKED: SMF

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FOR:
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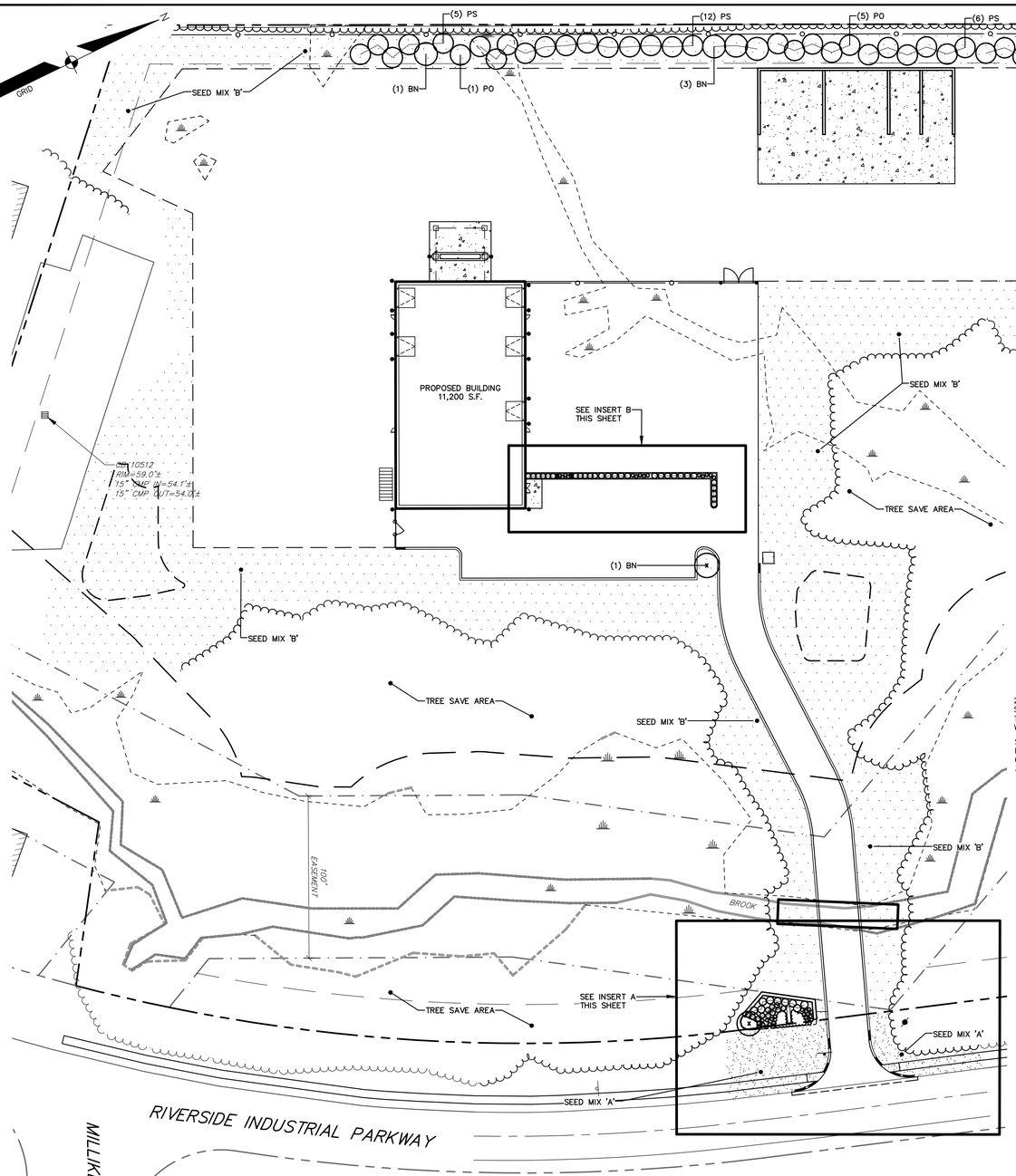
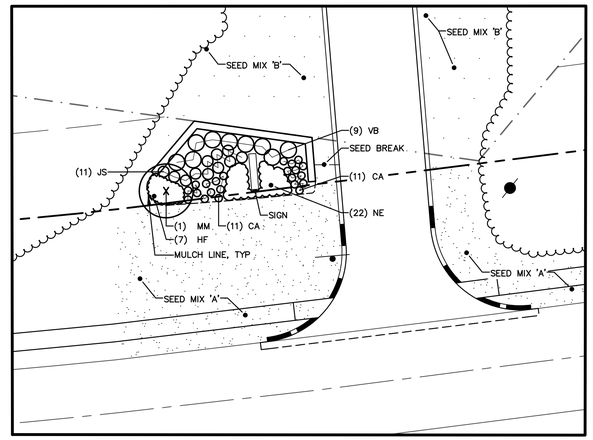
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	N.T.S.

SHEET 9 OF 12

16360 D.dwg, TAB:D3





INSERT A:
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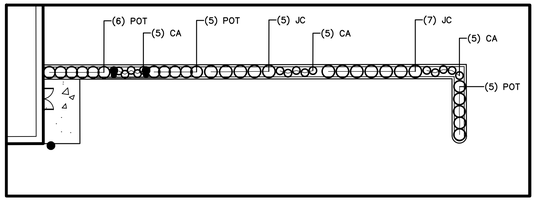

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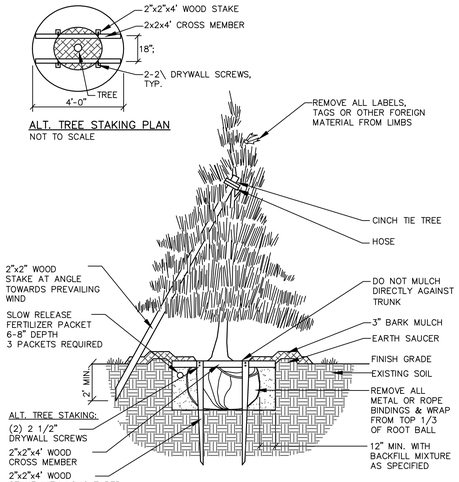


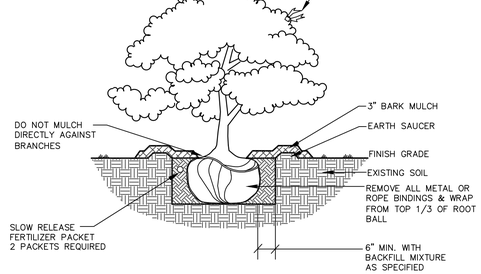
ALT. TREE STAKING PLAN
NOT TO SCALE

NOTES:

INSTALL STAKES AND GUYS TO TREES IF THE FOLLOWING APPLY:

1. THE TREE IS OF SUBSTANTIAL SIZE.
2. THE PLANTING LOCATION IS EXTREMELY WINDY, AS ON OPEN UNDEVELOPED SITES.
3. THE PLANTING LOCATION IS COMPRISED OF SAND OR OTHER LOOSE TEXTURED SOILS.
4. IF STAKES AND GUYS ARE REQUIRED, REMOVE AFTER ONE YEAR TIME.

DECIDUOUS TREES
EVERGREEN TREES
NOT TO SCALE



DECIDUOUS & EVERGREEN SHRUB
NOT TO SCALE

LANDSCAPE NOTES

1. PLANT QUANTITIES SHOWN ON PLANT LISTS ARE FOR CONVENIENCE TO THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL INSTALLATION AS SHOWN ON PLANS.
2. SIZE AND GRADING STANDARDS OF PLANT MATERIALS SHALL CONFORM TO THE LATEST EDITION OF "U.S.A. STANDARD FOR NURSERY STOCK," BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
3. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
4. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE BY THE OWNER.
5. PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR BY THE CONTRACTOR AND A PERIOD OF TWO YEARS THEREAFTER BY THE OWNER FROM DATE OF INSTALLATION. DURING THE ONE YEAR GUARANTEE PERIOD, DEAD PLANT MATERIAL SHALL BE REPLACED AT NO COST TO THE OWNER. AT THE END OF THE ONE YEAR PERIOD, THE CONTRACTOR SHALL OBTAIN FINAL ACCEPTANCE FROM THE OWNER.
6. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
7. EXISTING TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
8. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF THE UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER.
9. ALL SHRUB BEDS SHALL BE MULCHED WITH 3" CLEAN SHREDDED DARK BROWN BARK MULCH.
10. THE CONTRACTOR SHALL PROVIDE 4" LOAM FOR ALL AREAS TO BE SODDED OR SEEDED. PLANTING AREAS SHALL RECEIVE 12" ROLLED THICKNESS OF LOAM. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR PERENNIAL AND ANNUAL FLOWER BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.

PLANT SCHEDULE

KEY	BOTANIC NAME	COMMON NAME	SIZE / NOTES
BN	BETULA NIGRA	RIVER BIRCH	10'-12' HGT MIN. 3" CAL. 3 LEADERS
CA	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS	#2 CONTAINER
HF	HEMEROCALLIS FULVA 'STEPHANIE RETURNS'	STEPHANIE RETURNS DAYLILY	#2 CONTAINER
JC	JUNIPERUS CHINENSIS 'GOLD LACE'	GOLD LAVE JUNIPER	#5 CONTAINER
JS	JUNIPERUS SQUAMATA 'HOLGER'	HOLGER JUNIPER	#5 CONTAINER
MM	MAGNOLIA X LOEBNERI 'LEONARD MESSEL'	LEONARD MESSEL MAGNOLIA	3" CALIPER
NF	NEPETA X FAASSENII 'EARLY BIRD'	EARLY BIRD CATMINT	#2 CONTAINER
PO	PICEA OMORIKA 'SIBERBLUE'	SERBIAN SPRUCE	8'-10' HGT
POT	PHYSOCARPUS OPULIFOLIUS 'TINY WINE'	NINEBARK	#5 CONTAINER
PS	PINUS STROBUS	WHITE PINE	8'-10' HGT
VB	VIBURNUM X BURKWOODII 'MOHAWK'	BURKWOOD VIBURNUM	5'-6' B&B

SEED MIXES

SEED MIX A- MDOT PARK MIX

SEED MIX B- NEW ENGLAND CONSERVATION MIX (WWW.NEWP.COM)

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	DEED LINE/R.O.W.	
	EASEMENT	
	EDGE WETLAND	
	WETLANDS	
	BUILDING	
	EDGE PAVEMENT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	CHAIN LINK FENCE	
	RETAINING WALL	
	SIGN	
	DECIDUOUS TREE	X
	CONIFEROUS TREE	X
	MULCH LINE	

WILLIAM T. CONWAY, RLA 108

REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
No. 108
STATE OF MAINE
12-18-18

DESIGNED	CHECKED
DMD	WTC

REV'S	BY	DATE	
F.	SMF	12-18-18	REVISE FUEL ISLAND AND RESUBMIT
E.	SMF	12-12-18	RESPONSE TO CITY COMMENTS
D.	SMF	10-23-18	ADDED 75' STREAM SETBACK TO SITE PLANS
C.	SMF	9-21-18	REVISED WETLAND IMPACT AREA
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STATUS: PRELIMINARY, NOT RELEASED FOR CONSTRUCTION
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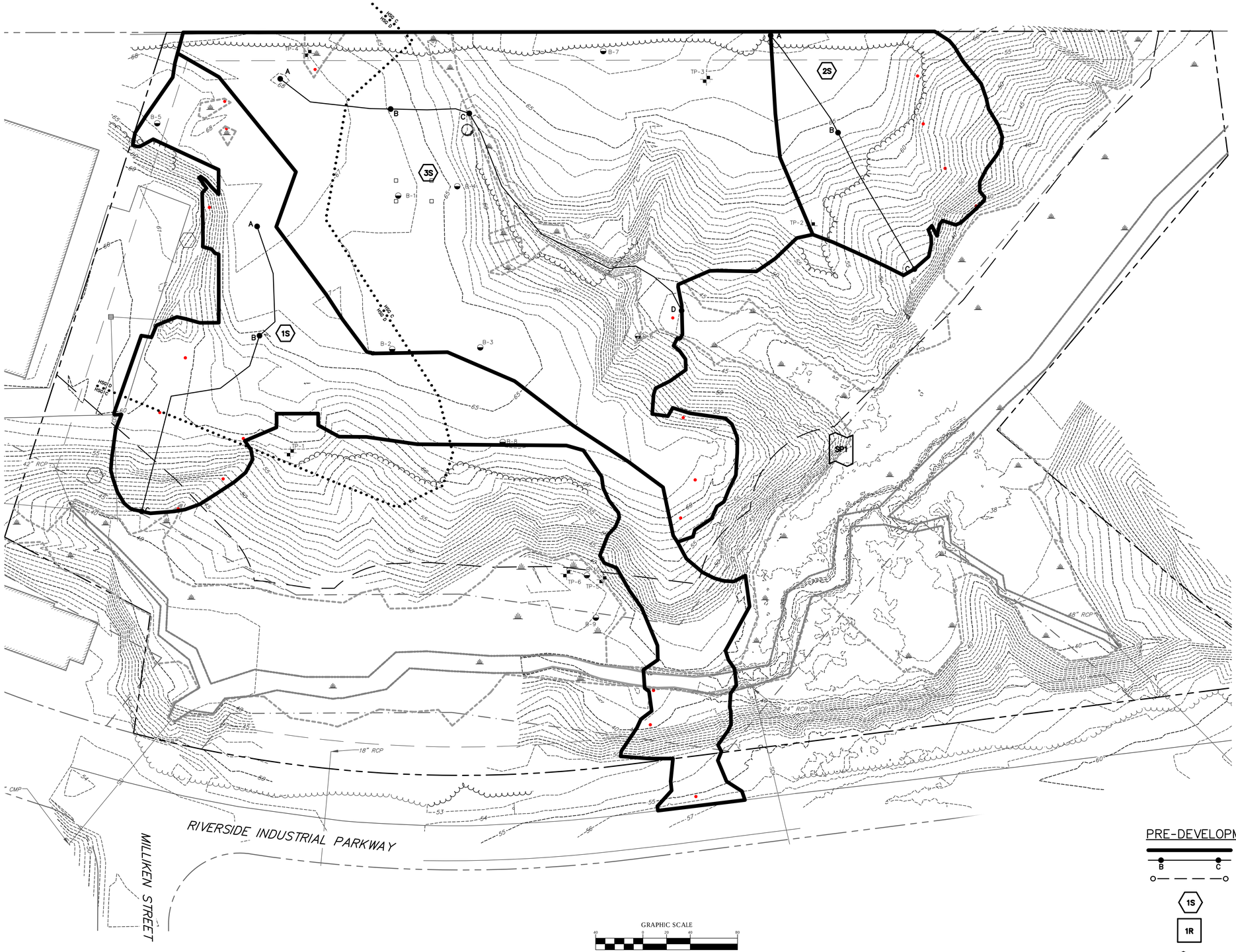
LANDSCAPING PLAN
OF:
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE
FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 40'

SHEET 10 OF 12

16360 Lawg. TAB:L



GRAPHIC SCALE

(IN FEET)
1 INCH = 40 FT.

PRE-DEVELOPMENT LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (B — C)
- REACH
- 1S — WATERSHED LABEL
- 1R — REACH
- SP1 — STUDY POINT
- 1P — STORMWATER TREATMENT/DETENTION POND
- SOILS BOUNDARY

SHAWN M. FRANK, PE 6396

STATE OF MAINE
SHAWN M. FRANK
No. 6396
LICENSED
PROFESSIONAL ENGINEER
12-18-18

DESIGNED	CHECKED
SAH	SMF

REV:	BY:	DATE:	STATUS:
F	SMF	12-18-18	REVISE FUEL ISLAND AND RESUBMIT
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PRE-DEVELOPMENT WATERSHED PLAN

OF:
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE

FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
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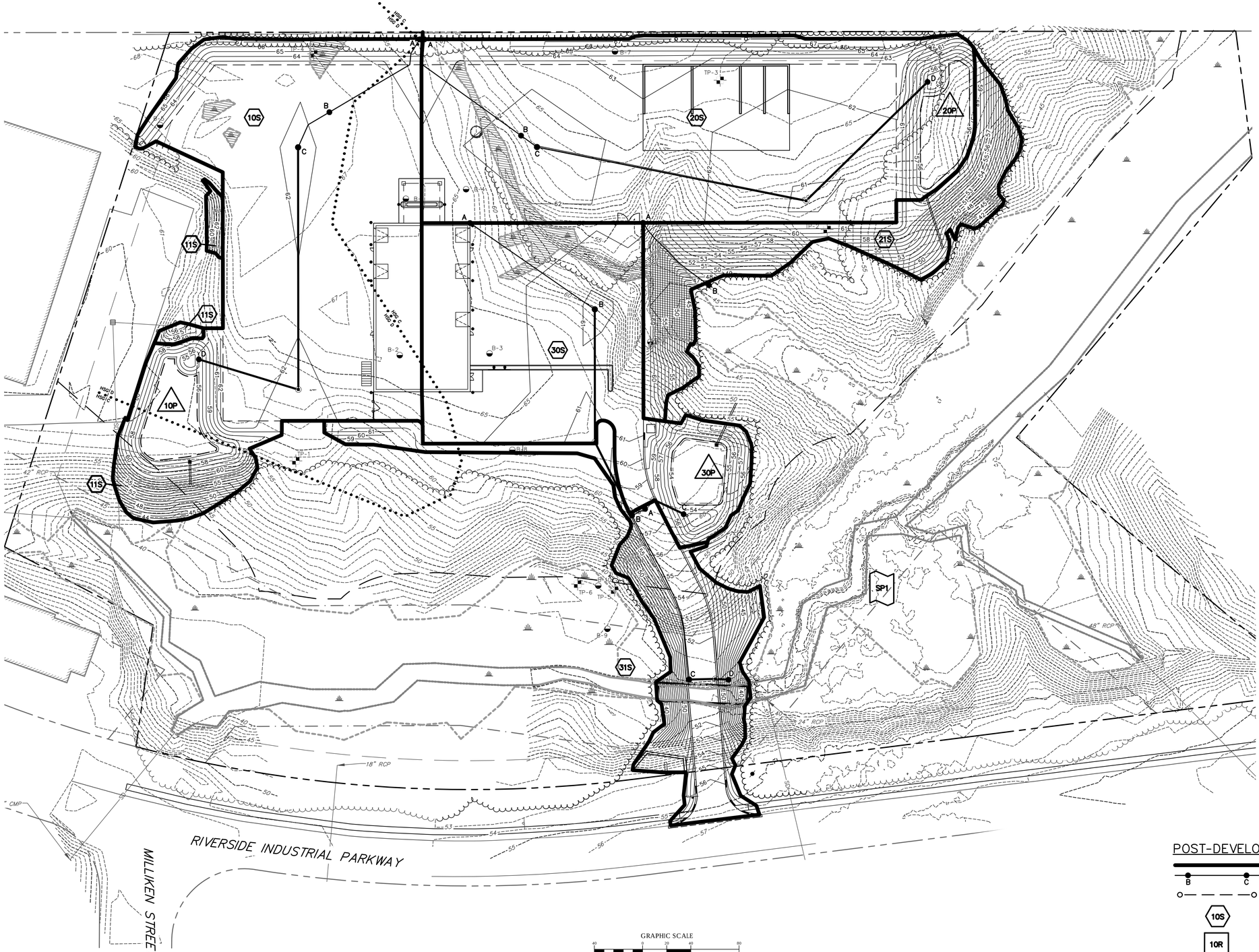
PROJECT NO.	SCALE
16360	1" = 40'

16360 SWP.dwg, TAB:PRE



POST-DEVELOPMENT LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (B — C)
- REACH
- 10S — WATERSHED LABEL
- 10R — REACH
- SP1 — STUDY POINT
- 10P — STORMWATER TREATMENT/DETENTION POND
- SOILS BOUNDARY

SHAWN M. FRANK, PE 6396

STATE OF MAINE · SHAWN M. FRANK · No. 6396 · REGISTERED PROFESSIONAL ENGINEER · 12-18-18

DESIGNED	CHECKED
SAH	SMF

F	SMF	12-18-18	REVISE FUEL ISLAND AND RESUBMIT
E	SMF	12-12-18	RESPONSE TO CITY COMMENTS
D	SMF	10-23-18	ADDED 75' STREAM SETBACK TO SITE PLANS
C	SMF	9-21-18	REVISED WETLAND IMPACT AREA
B	SMF	8-27-18	REVISED PER CITY COMMENTS
A	SMF	7-13-18	ISSUED TO CITY
REV.	BY:	DATE:	STATUS

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75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
tel. 207.200.2100

POST-DEVELOPMENT WATERSHED PLAN

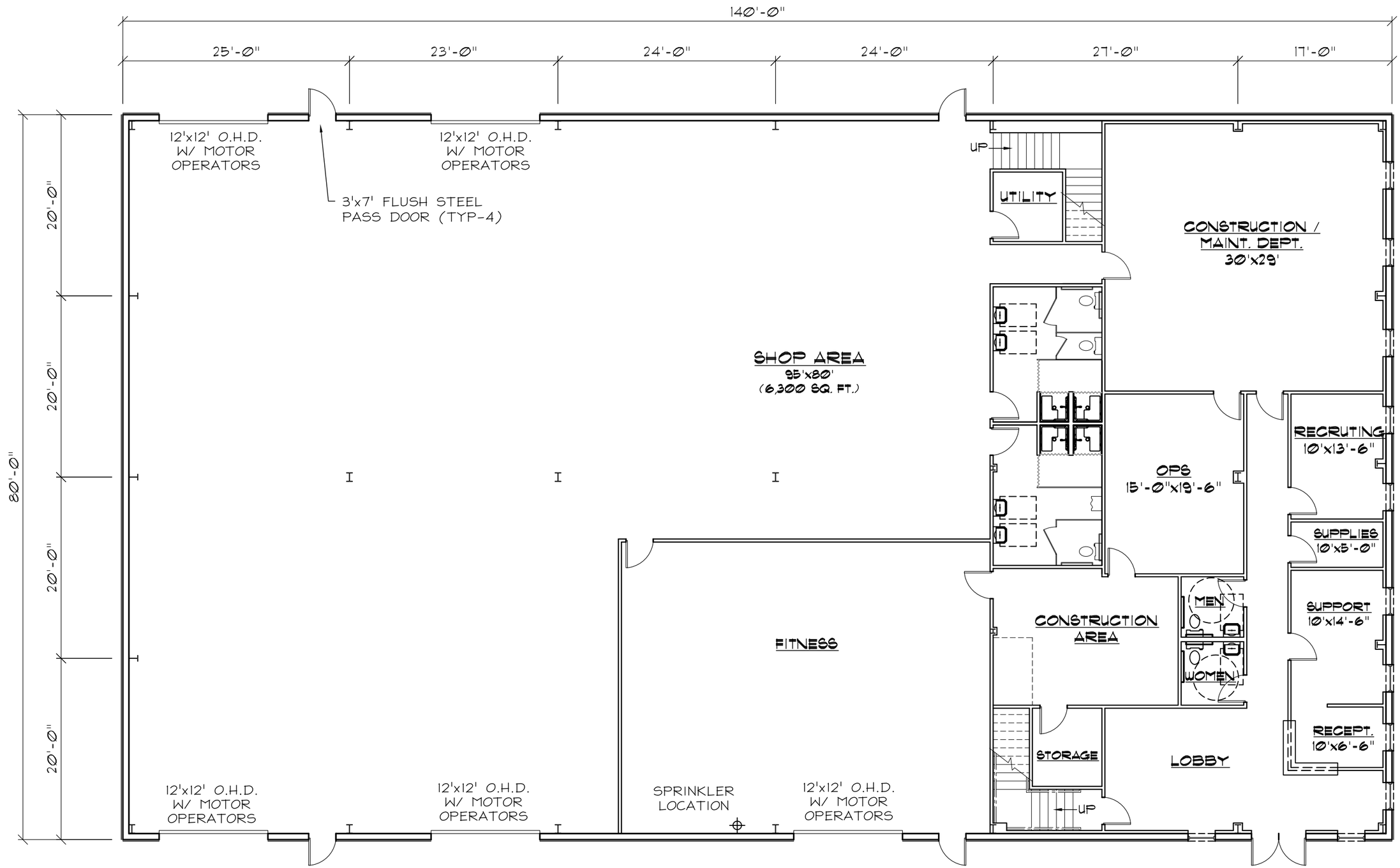
OF:
250 RIVERSIDE INDUSTRIAL PARKWAY
RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE

FOR:
TWO EISENHOWER DRIVE, LLC
P.O. BOX 1120
PORTLAND, MAINE 04104

PROJECT NO.	SCALE
16360	1" = 40'

SHEET 12 OF 12

16360 SWP.dwg, TAB:POST



FIRST FLOOR PLAN

SCALE: 3/32" = 1'-0"

SCALE AS SHOWN
DATE MAY 16, 2018
DRWN. BY: RMA
EST.# 18028

PATCO CONSTRUCTION INC
1293 MAIN STREET SANFORD, ME 04073
TEL: (207)324-5574 FAX: (207)324-1643
www.patco.com

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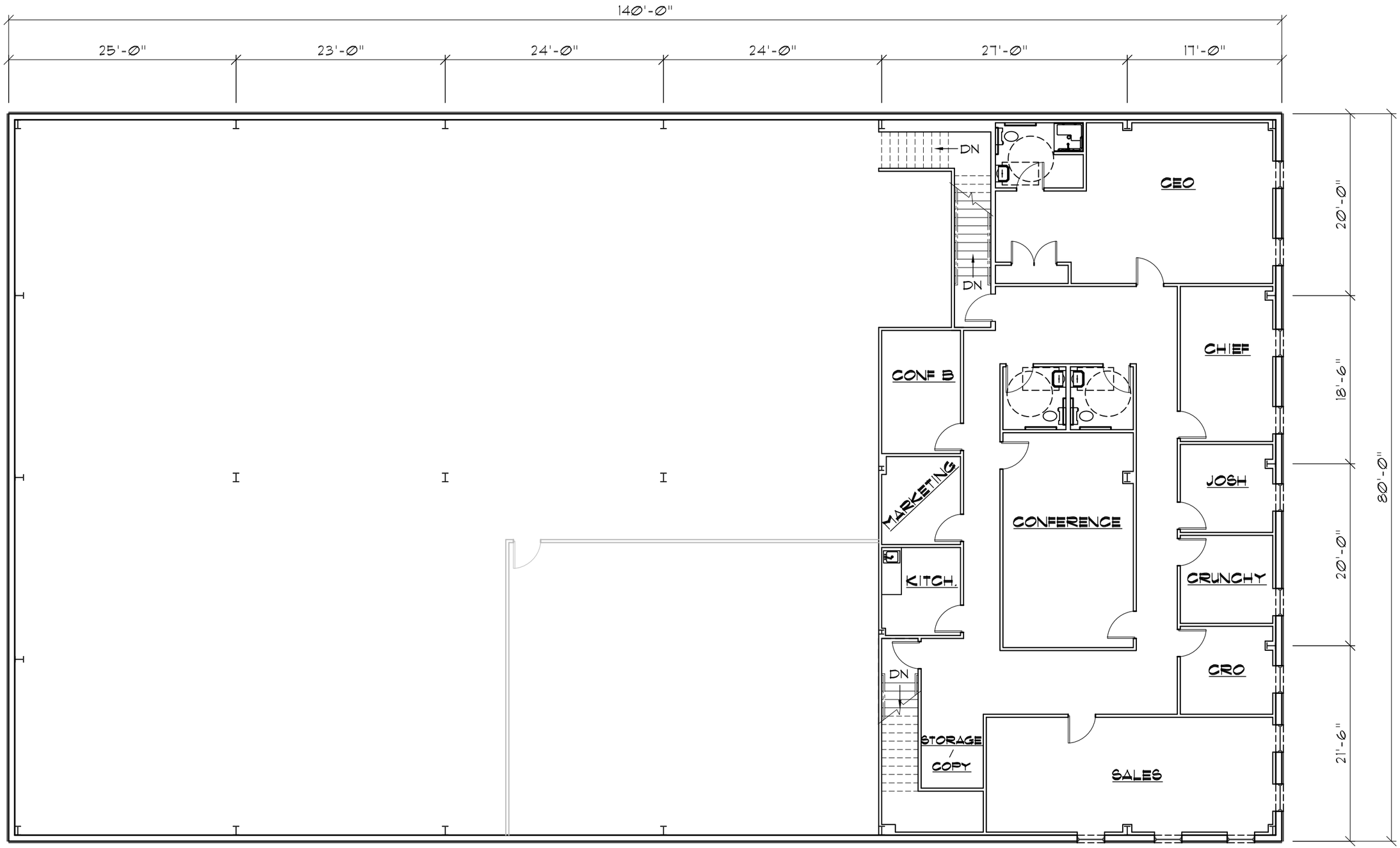
JOB # 18028

FIRST FLOOR PLAN



SECOND FLOOR PLAN

SCALE: 3/32" = 1'-0"

SCALE: AS SHOWN
DATE: MAY 16, 2018
DRWN. BY: RMA
JOB #: 18028

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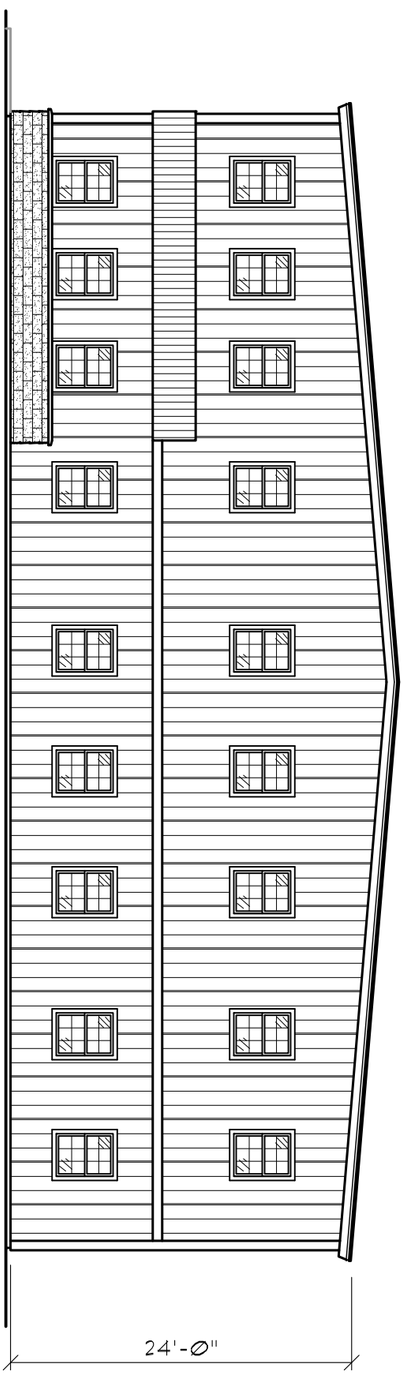
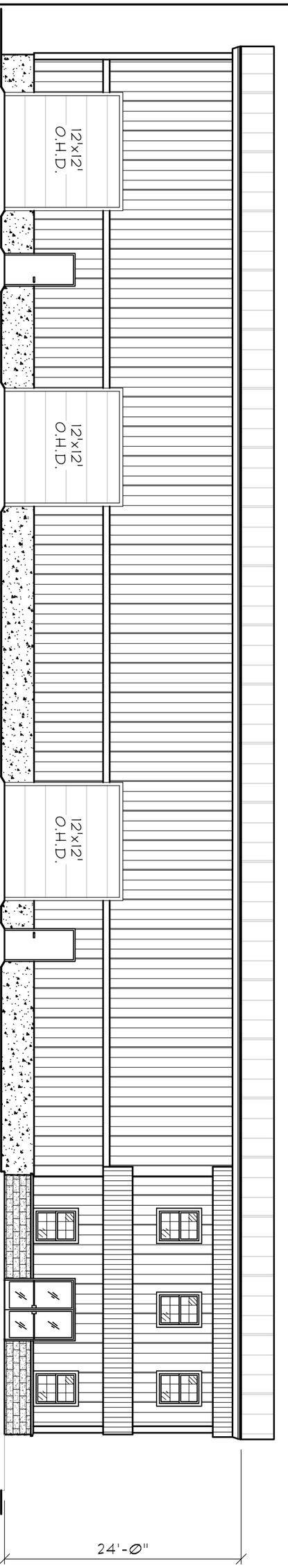
SECOND FLOOR PLAN



ENDWALL ELEVATION

SCALE: 3/32"=1'-Ø"



SIDEWALL ELEVATION

SCALE: 3/32"=1'-Ø"

JOB # 18028

ELEVATIONS

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SCALE: AS SHOWN

DATE: MAY 16, 2018

DRWN. BY: RMA

EST.# 18028